

# COMMERCIAL Service Manual

By K. M. NEWCUM

## Piston & Piston Valve Assemblies Used on Commercial Units

### CHAPTER 6—Commercial Condensing Units—Continued

#### Piston and Piston Valve Assemblies

The piston or pistons in the commercial compressor are made of a high grade cast iron or similar metal. Their walls are machined to very close tolerances and to a smooth high-polished finish.

There are several designs of pistons. Some pistons are equipped with piston rings while others are not. Some with valves and others not. These features and others pertaining to the servicing problems will be discussed separately.

Where pistons are not equipped with piston rings, such as the Frigidaire compressor shown in Fig. 38, the piston is lapped to the cylinder wall, and with an oil film supplied by the splash system from the crankcase, an efficient seal is effected.

Most of the larger commercial compressors do have piston rings. Some designs employ more rings than

others and the location of the rings varies with different designs.

Note the Curtis compressor in Fig. 36. It is equipped with two piston rings near the top of the piston. In the top location these are labeled compression rings, as in an automobile engine. Note the two grooves below the rings, their purpose is to hold and distribute lubricating oil over the cylinder wall on each stroke of the pistons.

Note the Frigidaire compressor in Fig. 35. It also is equipped with two compression rings. Note the oil groove around the bottom of the piston. Also observe that when the piston is all the way down, this groove is exposed to the oil being splashed around by the crank shaft. On each down stroke these grooves are filled with oil which on the upstroke of the piston is distributed to the cylinder wall to effect a tight seal and lubrication. This design may be noted also in Fig. 40.

The Universal piston shown in Fig. 41 is equipped with three compression rings.

Designs differ to meet requirements found necessary by design engineers.

Note the York pistons in Fig. 42. They have two compression rings near the top of the piston and also two oil rings near the bottom of the pistons. Note also that the pistons are of the trunk type. In this design the two lower rings are to prevent large quantities of oil from passing the pistons by way of the cylinder walls.

Piston rings are usually of cast iron and require the same careful handling to prevent breaking when removing or handling as automobile rings. There is some expansion from heat. They are fitted slightly closer than automobile rings, as the heat in a refrigeration compressor is much less than in the automobile engine where combustion is taking place.

Where the refrigerant vapor is drawn into the crankcase and then up through the pistons, the pistons are equipped with valves. For the purpose of definition, these valves, although sometimes called suction valves, will be called piston valves.

The other method of returning the refrigerant vapor is through a valve located in the discharge valve plate. These valves not being in the piston but acting as suction valves will be labeled suction valves. These two

types of designs will be discussed separately.

The piston valves are located in the top of the piston and serve in effect as a check valve. Their purpose is to open on the suction or down stroke of the piston to allow the vapor in the crankcase to enter the cylinder chamber. On the up or compression stroke, this valve closes to trap the refrigerant vapor in this chamber so that it will be forced by compression through the discharge valve.

Operation of the valve is automatic and usually does not depend upon a spring to open or close it. The pressure difference in either case is sufficient to operate the valve.

A typical piston valve arrangement is shown in Fig. 40. Note the valve retainer "A" which holds the valve "F" in place in the piston. There are many different piston valve arrangements. Note the York arrangement shown in Fig. 42. Another Frigidaire piston and retainer assembly is shown in Fig. 43.

#### Thickness Main Difference

The major difference between piston valves is the thickness of the valve disc or plate and the size. The thinner the disc, the more flexible it is and thus easier in its manner to conform to the valve seat. The thinner discs also are less noisy. Thin discs of high grade Swedish steel are more generally used on modern compressors.

Life of the piston valve or disc is in some respects determined by its thickness, by which is meant that a thin disc may wear through and require replacing after several years of service, while the thicker disc has more years of wear.

The thicker disc, however, because of its rigidity will not conform to slight irregularities on the valve seat as will the thinner disc, and requires lapping to the valve seat.

The service man will observe then that in replacing a leaky thin piston valve that if the disc is worn through from natural wear, the seat needs only to be polished with a flat steel tool or on lapping plate and a new disc installed. It is not necessary to lap the thin disc to the seat.

However, in replacing a thick disc, the new disc should be lapped to the valve seat to assure a tight fit.

In the piston valve shown in Fig. 40 the disc is free to move from side to side within the confines of the valve. It is so arranged that allowance is provided for a lift. Although this lift is slight it is absolutely necessary so that the valve can operate.

On the type shown in Fig. 42 for comparison the valve disc is held securely in the center of the piston by the cap screw. The movement is provided by flexing of the outer surface of the thin disc.

#### Polished Side Down

Piston discs are stamped from a sheet of steel and a slight burr or rough edge is left on disc from the die. In most cases, only the smooth side of the disc is polished and the burred edge should always be installed up or away from the valve seat, or, what amounts to the same thing, only the polished side of the disc should be in contact with the valve seat.

Note in Fig. 41, the piston valve is equipped with a valve spring. This spring is a very thin piece of Swedish steel and requires but a slight amount of pressure to cause it to operate. Its prime purpose is not to close the valve but hold the valve disc in place to minimize noise.

Two different Kelvinator piston valve arrangements are shown in Fig. 44. One design uses the thin steel disc which is held in place by the valve guide. The other design employs the so-called poppet type of piston valve which is similar in appearance to the automobile valve. In this setup, the valve is lapped to the valve seat to effect a tight seal. The amount of lift is adjustable by setting the valve nut on the inside of the piston.

The piston pins used in refrigeration compressors are steel, hardened and ground to very close tolerances.

#### Piston Pin Arrangements

There are several different types of piston pin arrangements. One type of design is known as the full floating pin, by which is meant the pin is not secured either in the piston bosses or in the connecting rod, but is free to float as it sees fit.

In this type of design the ends of the pins are equipped with large-headed copper pins. These copper heads come in contact with the cylinder walls at different times in operation, but due to their softness do not score the wall. The feature of this design is that all three bearing surfaces, those of the connecting rod and both piston bosses, are utilized.

This design may be noted in Figs. 38 and 42.

Another design much used in automobile construction is one where the connecting rod is clamped to the piston pin and the two bearing surfaces of the piston bosses are utilized. In this design the pin ends can not touch the cylinder walls as the piston bosses do not provide sufficient side

## York Pistons with Rings

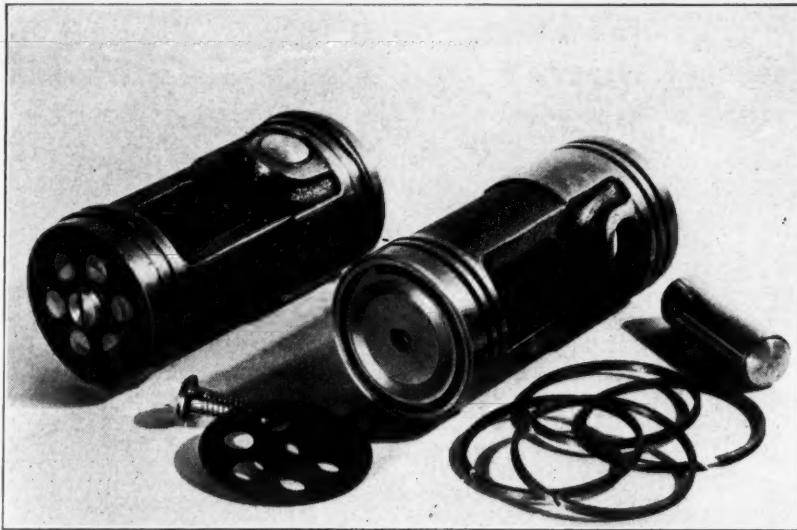


Fig. 42—York trunk-type pistons with compression rings and oil rings.

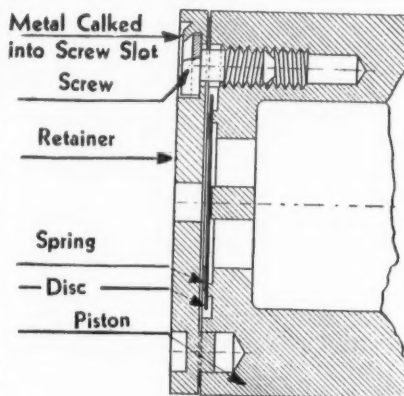
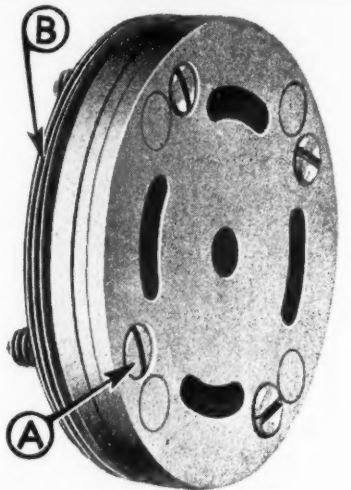
movement. This design may be noted in Figs. 35, 36, and 41.

A third design is where the pin is free in the connecting rod but is locked in the piston bosses. This design may be seen in Fig. 44.

Some wear may be expected on piston pins for they are further removed from the oil than the crankshaft and other working parts of the compressor.

New piston pins may be installed, but as the wear is usually distributed between the bearing surfaces, it is advisable either to install new bushings or to ream the old ones and use an oversize pin.

Many service shops are equipped to do this work, or the better machine shop can be depended on to do the job accurately. The pin should be fit so that it is free to move with a slight pressure with the fingers.



#### Kelvinator Designs

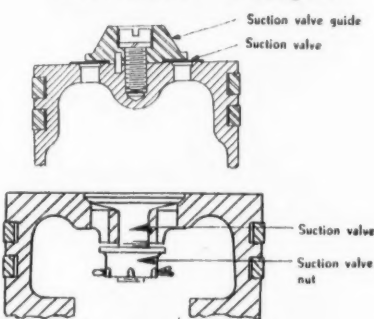


Fig. 44—Two Kelvinator arrangements, top design using thin steel disc; bottom, poppet-type valve.

Fig. 43—Frigidaire piston and retainer assembly.

#### Piston Assembly

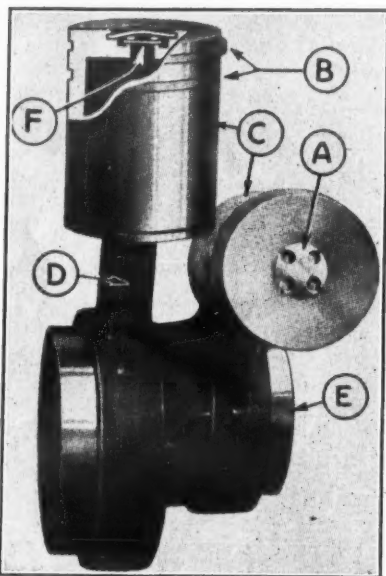


Fig. 40—Pair of pistons. (A) piston valve retainer plate; (B) piston rings; (C) piston; (D) eccentric strap connection arm; (E) eccentric; (F) piston valve.

#### Piston Pin and Connecting Rod

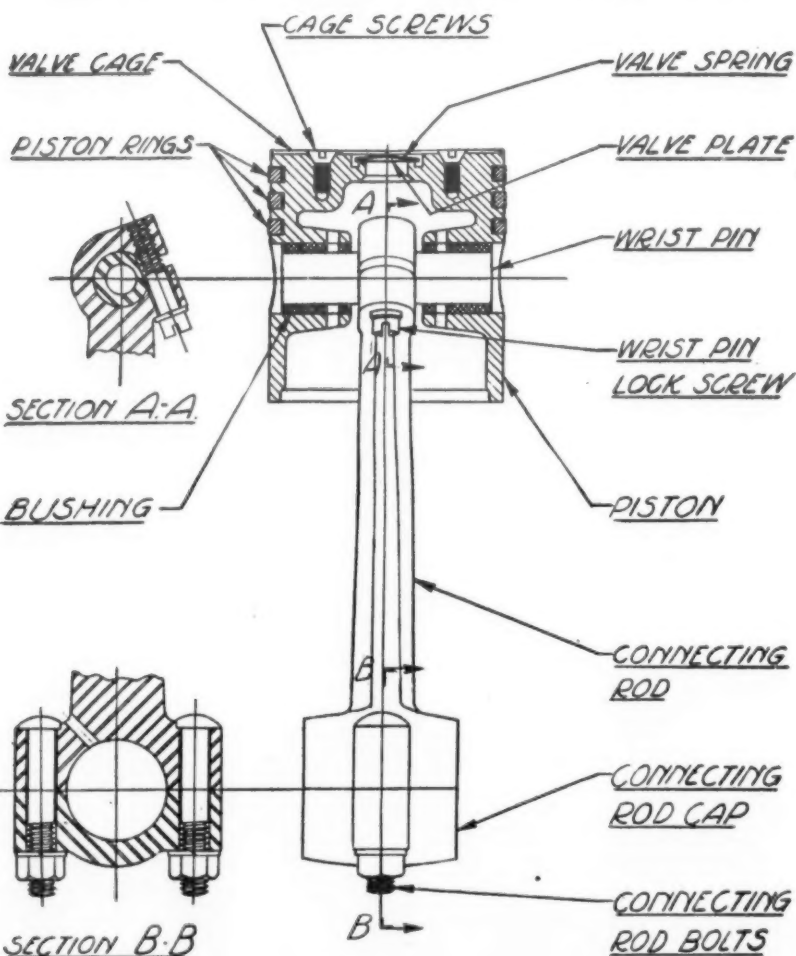


Fig. 41—Design for holding the piston, piston pin, and connecting rod together (Universal Cooler).

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## Seattle Council Drops Proposed Servicing Code

### Bill Required Licenses For Installers and Service Men

SEATTLE—Behind the killing of a measure to regulate the refrigeration installing and servicing business here by the City Council on July 16 is the story of an effort by local dealers to eliminate the "fly-by-night" and irresponsible operator, whose activities in the past have been embarrassing to reputable retailers.

Unless current sentiment changes, it appears unlikely that this or any other regulatory measure will be passed, although the need of some sort of regulation is admitted by most dealers.

The bill was drawn up and presented to the Council by a small group of Seattle dealers, who had previously been holding informal meetings to discuss mutual problems and combat certain malpractices which had crept into the local refrigeration business. Impetus was given the move by reports that Detroit had adopted a similar code.

At the first meeting with the Council, opinion of most of the dealers present was that the bill should become an ordinance. Dealers who had initiated the regulatory move, however, felt that a majority of retailers in the city should favor the bill before it was enacted, and efforts were made to accomplish this end.

Dealer groups met with the City Council twice, and with the Council's licensing committee two or three times. As the meetings continued, however, dealer opposition to the licensing measure grew, with the result that, when it came up for passage, the Council killed the bill, believing that it would become an unpopular and unsupported measure.

Opposition to the bill developed first among dealers affiliated with national distributors, who did not take part in the first discussions, and who felt that the bill, as drawn, would be subject to political abuses, with questionable benefits in proportion to license and bond costs.

One dealer said that few of the unestablished sales and service men are discovered by inspectors, and that these same operators often escape Federal taxes through not having established places of business.

Objection was also made to the examining board as provided for in the bill, which many believed, would subject the act to political influence. Still other objections centered around the performance bond, which, many dealers pointed out, would give poor pay customers technical leverage in avoiding payment on jobs, even if they were properly installed.

Another problem which the bill does not provide for is that of costs. One

(Concluded on Page 19, Column 2)

## Two Southern Utilities' Appliances Sales Up

BIRMINGHAM, Ala.—Two southern utility companies are showing large increases in sales of major electrical appliances this year.

In a 60-day contest, salesmen for Alabama Power Co. sold 1,520 electric refrigerators, 714 ranges, and 318 water heaters. Quotas had been set at 1,200 refrigerators, 300 ranges, and 150 water heaters, so that sales exceeded quotas by 27% in the case of refrigerators, 138% in ranges, and 112% in water heaters.

Refrigerator sales slumped slightly in the territory of Georgia Power Co. during the first seven months of the year, the total being 5,328 units as compared with 6,144 for the same period in 1935.

Water heater and range sales, however, were far over their 1935 marks. Sales of the former totaled 2,272 units, a gain of 77.5% over the 1,280 sold up to Sept. 1 last year. Range sales totaled 3,901 against a total of 2,571 for the same period of last year, an increase of 51.7%.

## Conditioners and Refrigerators Are Shown in N.Y.

By Winifred B. Hughes

NEW YORK CITY—Five manufacturers of air-conditioning and oil-burning equipment and 13 electric refrigerator manufacturers exhibited products at the 1936 National Electrical and Radio Show sponsored by the Electrical Association of New York City, at Grand Central Palace, Sept. 9-19. More than 181,000 persons attended the show up to closing time Friday, and approximately 20,000 more came on the last day.

Exhibiting in the air-conditioning and oil-burning equipment group, were: Continental Motors Corp.; Frigidaire Corp.; Kelvinator Corp.; Norge Corp.; and Westinghouse Electric & Mfg. Co.

Representing the electric refrigeration industry were: Apex Rotarex Corp., Rex Cole, Inc. (General Electric), Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co. (Hotpoint), Kelvinator Corp. (Concluded on Page 2, Column 1)

## Porcelain Institute to Convene Oct. 1-2

CHICAGO—Porcelain enamel men from all sections of the country will gather at the Hotel Statler, Cleveland, Thursday and Friday, Oct. 1-2, for the sixth annual meeting of the Porcelain Enamel Institute and sales conference of the industry. A program covering many phases of the industry's operation has been planned.

Opening day will be devoted to a morning sales conference of the industry, sponsored by the Educational Bureau of the institute, to which both members and non-members have been invited, followed by a luncheon meeting of the executive committee and afternoon sessions of the institute's divisions. The annual meeting proper will convene the following day.

Rudolf W. Staud, sales promotion and advertising manager of the Benjamin Electric Mfg. Co., will address the convention Friday afternoon on "Practical Problems Under the Robinson-Patman Act."

At this meeting, George F. Taubeneck, editor of AIR CONDITIONING AND REFRIGERATION NEWS, will speak on "What the Rest of the World Thinks About Porcelain Enamel."

Following a breakfast meeting of the institute's executive committee Thursday morning, eight addresses will be heard. The speakers and their subjects are as follows:

Emery L. Laiser, Titanium Alloy Mfg. Co.—"What Has the Educational Bureau Done?"; George S. Blome, Baltimore Enamel & Novelty Co.—"The Industry's Barometer"; Herman L. Cook, Norge Corp.—"Controlling"

(Concluded on Page 2, Column 5)

## Macy Now Sole N.Y. Dept. Store Monitor Top Agency

NEW YORK CITY—The Rex Cole department at Macy's has added General Electric's Monitor Top line of refrigerators to its stock of G-E appliances, thereby becoming the exclusive department store distributor of Monitor Tops in Greater New York.

The Rex Cole department's two price (cash and credit) sales system now in effect on all G-E equipment will prevail also with the Monitor Tops.

## Carrier Discontinues Three Subsidiaries

NEWARK—Carrier Corp. last week announced the discontinuance and liquidation of three former subsidiaries: Carrier Engineering Corp.; Carrier-Brunswick International, Inc.; Carrier Engineering Corp. of Calif.

This move was made in order to effect a simple corporate structure and to accomplish administrative savings, officials declared. All business formerly conducted under the name of these former subsidiaries will hereafter be done directly by Carrier Corp.

## Two Utility Cos. Adopt Economy Purchase Plan

### Penn & Ohio Companies Enter in Cooperative Financing Agreement

AKRON, Ohio—Ohio Edison Co. and Pennsylvania Power Co., both subsidiaries of the Commonwealth & Southern Corp., have adopted the "Economy Purchase Plan" for financing retail sales of electrical appliances, including refrigerators, it was announced last week.

The plan was introduced in the Ohio Edison territory Sept. 15, and will be put in operation Oct. 1 in the territory of the Pennsylvania Power Co.

The "Economy Purchase Plan" is a cooperating arrangement for retail instalment financing between public utility companies, appliance manufacturers, appliance retailers, and the Commercial Credit Co. Any retailer handling a line that is approved under the plan can participate by filing an application with the cooperating utility and signing the repurchase agreement.

The advance to retailers is 100% of the time balance less the finance charges.

Under the plan the purchaser is offered the convenience of making payments of the instalments at the same time and place the utility service bills are paid. The plan discriminates between prompt and slow payers by providing a net rate for those paying within 10 days of due date. After 10 days the instalment must be paid in the gross amount, which is 25 cents higher than the net amount. The purchaser, therefore, has a financial inducement to pay promptly.

When an account becomes 30 days past due the appliance is immediately repossessed by Commercial Credit, and repurchased by the retailer.

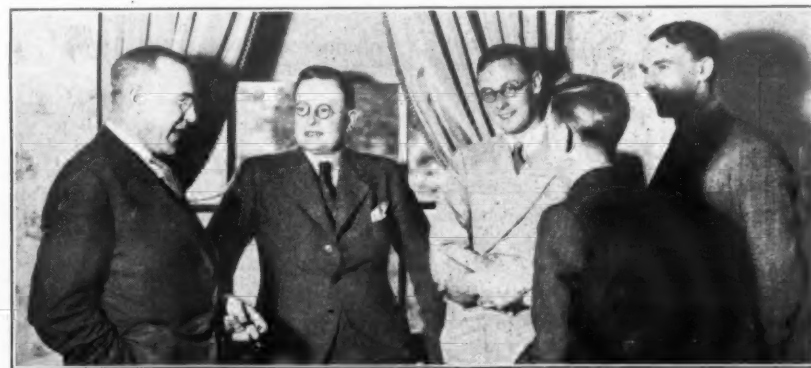
A minimum down payment of \$3, and a minimum monthly payment of \$2, with a maximum of three-year terms, is called for by the plan. On ranges and water heaters the minimum down payment is \$2.

## Fred Davison to Head Cincinnati Group

CINCINNATI—Fred M. Davison, manager of the Cincinnati district for Frigidaire Corp., has been elected head of the refrigeration division of the Cincinnati Electrical Association for the ensuing year. Carl E. Haber of Graybar Electric Co. is the retiring president.

Other newly elected officials of the refrigeration group are: E. Guy Flaig of Appliances, Inc., vice president; Roland R. Hand of General Electric Supply Corp., secretary; and Allen T. Shott of Schneider-Shott Co., treasurer.

## Scotch Refrigeration Men Visit Universal Cooler



Three officials of L. Sterne & Co., Ltd., The Crown Iron Works, Glasgow, visited Universal Cooler Corp.'s Detroit plant last week. Manufacturer of large-size ammonia machines, the company also handles Universal Cooler small commercial and complete domestic units. In the picture are: Frank S. McNeal, general manager of Universal Cooler's Detroit plant; D. S. Carruthers, secretary of L. Sterne & Co.; E. R. Field of Sterne's sales department; Dan Robertson (back to camera), general manager of Universal Cooler's Brantford, Ontario, Canada, plant; and A. K. Alcock, Sterne's refrigeration engineer.

## 600 Salesmen Sail On Kelvinator Cuban Trip

NEW YORK CITY—Six hundred Kelvinator salesmen from all parts of the country, Kelvinator executives, and invited guests left New York City at 10 p. m. Monday, Sept. 21, aboard the Cunard-White Star liner *Frankonia*, for a 10-day cruise to Havana.

Three hundred and twenty-six of the passengers on the chartered ship were salesmen, winners in Kelvinator's "Keep the Ball Rolling" contest, which has been running for the past two months. The Havana trip was the big incentive in the drive.

Arriving in Havana Friday, the men will be entertained at a luncheon given by President George Mason, at which several Cuban officials and business leaders will be guests.

Among those expected to attend are Dr. Jose Manuel Cortina, secretary of state; Dr. Rafael Santos Jimenez, postmaster general; Dr. Antonio Beruff Mendieta, mayor of Havana; U. S. Ambassador Jefferson Caffery; U. S. Commercial Attache Walter Donnelly; U. S. Consul General G. R. Cameron; Senors Miguel Santiago Valencia and Juan Sabates of the Cuban Tourist Commission; and Senor M. R. Arellano of Arellano Co., Kelvinator distributor for Cuba.

Thomas Beck, president of Crowell Publishing Co., is also expected to be present. Kelvinator officials making the trip include H. W. Burritt, vice president in charge of sales; Sam Mitchell, manager of advertising and sales promotion; E. L. Bernays, public relations counsel; and Elmer L. Sylvester, public relations director.

Leaving Havana on Sunday, the men will return to New York City, arriving on Sept. 30.

## Group Buying Fight Renewed by Dealers

MILWAUKEE—The Wisconsin Radio, Refrigeration, and Appliance Association has actively renewed its fight against group buying by and for employees of Milwaukee industrial plants.

In a series of letters now being sent to 200 leading Milwaukee employers, the association is pointing out that group buying, at wholesale prices, will ultimately result in "squeezing out" the smaller merchant, and is urging them to discontinue the practice.

The association also plans to bring this series of letters to the attention of other retail trade associations in the Milwaukee area, with the suggestion, that they, too, follow up this effort.

The study of the situation, officers of the association say, has convinced them that the only way to check the group buying evil is to reach it through leading industrial and business men of the city. The men at the head of the large plants, it is believed, can correct the situation.

## Service Charge Scale Adopted On Time Sales

### Commercial Refrigerator Association Releases Charge Schedule

CHICAGO—Leading manufacturers of commercial refrigerators (display cases, store refrigerators, etc.) are now furnishing their dealers with a schedule of service charges on a 6% basis for deferred sales of commercial refrigerators, according to reports received by Paul Sullivan, secretary of the Commercial Refrigerator Manufacturers Association.

Effort to standardize more or less on some uniform basis for credit sales is in line with the sentiments expressed at a meeting of the manufacturers in June (reported in the July 1 issue of the News) in which "easy payment" financing was vigorously attacked.

With the table of suggested charges the manufacturers are sending suggestions for terms and conditions of sale, as follows:

Charges for time payments extending more than 3 months to be not less than those shown in the table. The dealer should understand and should make clear to the customer that these are not interest charges,

The table of suggested service charges on time sales will be found on page 8.

but represent the cost to the seller of providing economical credit facilities to the customer who does not desire to pay cash.

The down payment should be not less than 10% of the selling price and 10% on or before delivery, or a total of not less than 20% in cash. Trade-in or other allowance not to be considered as part of the cash down payment.

Terms not to exceed 24 equal monthly instalments.

Any instalment not paid when due to be subject to an interest charge of 6% from due date until paid.

If insurance is furnished by the seller, the cost of this service is to be added to the amount of the deferred balance, after computing the service charge.

## Westinghouse Markets 3 'Freeze-Proof' Water Coolers

MANSFIELD—Three new "Freeze-Proof" water coolers, especially designed to operate in temperatures below freezing, have just been introduced by Westinghouse Electric & Mfg. Co. The coolers are intended for general industrial use, such as in steel mills, factories, and other places where they may be subjected to sub-freezing temperatures.

Especially insulated and equipped with thermostatically controlled Corox heating elements, mounted in the lower part of the cabinet, the coolers, it is claimed, will operate without freezing in temperatures as low as 20° below zero.

Model FWPF-65 cooler has a capacity to cool 9½ gallons of water per hour, from 70° to 50°; Model FWPF-8 delivers 11.9 gallons; and Model FWPF-14, 14.4 gallons per hour, under similar conditions. Smallest model is equipped with a ¼-hp., 25-cycle condensing unit; middle-sized unit with ½-hp., 60-cycle unit, and the largest model with a unit of ¾-hp., 60 cycle.

Feature of the new coolers is an improved type of dual-action cooling, eliminating the conventional type of pre-cooler. The dual-action principle is made possible by wrapping the incoming water line around the outside of the evaporator shell, to take advantage of the cold produced at this point to cool the incoming water.

Motor, compressor, and condenser on the new coolers are water-cooled, providing for increased capacity and freedom from clogged condensers, it is claimed.

STARTING THIS ISSUE—"AIR CONDITIONING MADE EASY"

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## Marked Interest in Electric Ranges Shown at New York Exposition

(Concluded from Page 1, Column 2)  
ator Corp., Majestic Radio & Tel. Co., Inc., Norge Corp., Sears, Roebuck & Co., Stewart-Warner Corp., and Westinghouse Electric & Mfg. Co.

Executives and leaders of the electrical industry report that percentages of sales made at this year's show far exceeded those of last year, when 177,000 persons attended.

Unusual interest manifested in kitchen appliances, and particularly electric ranges, was partly due to the reduction of electric current rates in this district, according to John H. McKenna, eastern sales manager of the A. J. Lindeman & Hooverson Co., manufacturer of electric ranges.

### Interest in Electric Ranges

Norman L. Myers, district merchandise manager, Westinghouse Electric & Mfg. Co., emphasized the interest shown in electric ranges, especially on the part of builders and operators of apartment buildings. Receiving special attention at the Westinghouse exhibit were the planned kitchen displays, around which the products were grouped.

Similar interest in ranges was noted by Earle Poorman, district merchandise manager of the General Electric Co., who said: "Range sales were particularly gratifying; and the public's and dealer's interest in radio was pronounced."

Increase of 40% over last year's orders was reported by Nate Hast, sales manager of the Emerson Radio & Phonograph Co.

### Increased Buying Interest

Both increased buying interest, and improvement of equipment and exhibits were noted by Frank W. Smith, president of the Consolidated Edison Co., who visited the exhibit with other executives of the utilities, and H. H. Barnes, Jr., president of the Electrical Association of New York.

Among the features of the show that attracted widespread interest was the "home of the future"—a one-room apartment, titled for identification: "Real Living in Limited Quarters," and presented by the Consolidated Edison Co. of New York.

More than 75,000 persons passed through the small section, which was fitted up with 50 electrical gadgets. Kitchen of the apartment contained a General Electric kitchen sink unit, General Electric refrigerator, Westinghouse range, and other appliances.

### Replicas of Edison Dynamos

Replicas of Edison's first jumbo dynamos that supplied electric power in New York City, the setting of the original Pearl Street Power House designed by Edison and duplicates of other of the electrical genius' inventions were part of the exhibit.

Publicity for the show was handled chiefly through daily radio broadcasts of stations WEA, WJZ, WABC, and WOR, at which the show goes could witness broadcasts. Daily 10-page

supplements of the *New York Post*, containing advertisements, cuts, and feature articles on the show, were distributed daily.

The series of daily lectures on home cooking by noted home economists in the 350-seat auditorium on the second floor at the exhibit, attracted the attention of thousands of people.

### Home Service Program

Headed by Florence Freer of the Home Service Bureau of the Brooklyn Edison Co., Inc., as chairman, and Sally Ambrose of the New York Edison Co., Inc., as vice chairman, the committee included Caroline Cecil, Home Service Bureau, Bronx Gas & Electric Co., Doris V. Scott, Home Economics Bureau, New York & Queens Electric Light & Power Co., and Mrs. Cecil G. Harvey, Home Economics Bureau, Westchester Lighting Co.

Among the group of home economics experts who addressed the daily lecture groups were: Katharine A. Fisher, *Good Housekeeping Magazine*; Betty D. Supplee of WINS; Grace Pennock, *Delineator*; Winifred Wishard, *New York Post*; Helen Worth, *Brooklyn Daily Eagle*; Edith Barber, *New York Evening Sun*; Ada Bessie Swan, *Woman's Home Companion*; Nell Snively, Rex Cole, Inc.; Prudence Penny, *New York American*; Pina Floore, Westinghouse Electric & Mfg. Co.; Nancy Dorris, *The Daily Mirror*; Chef Melani, famous Hollywood chef; Mildred Nichols, Graybar Electric Co.; Esther Kimmel, *Pictorial Review*; Eloise Davison, *Herald-Tribune*; Martha Deane of WOR; Mrs. Wm. Dick Spörberg; Mrs. Christine Frederick; Mrs. Anna Steese Richardson; Mrs. Mildred Karpman; and Mrs. Bert Hendrickson.

### Other Features of Exhibit

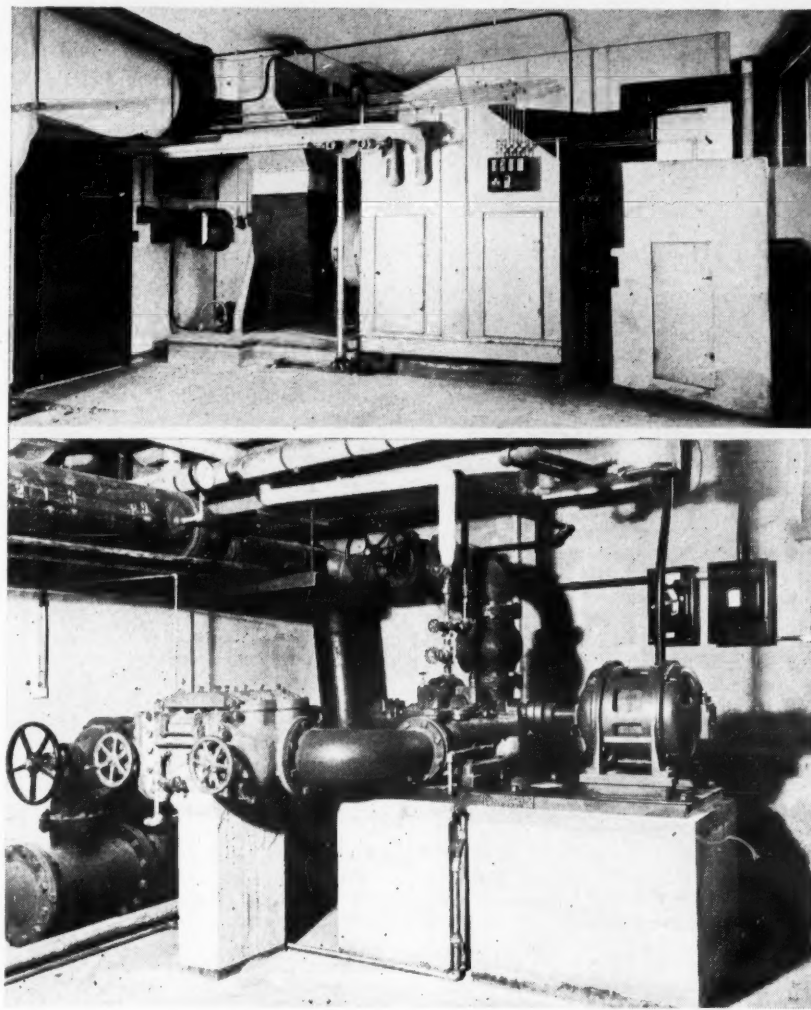
Other features of the exhibit included: The Radio Lamp—which combines in one element a lighting unit and a speaker which eliminates the use of a speaker in a radio set, and permits the production of music at any place in the home; "The Electrovox," which combines sound, light, and motion so that the listener may see as well as hear the music; a group covering the history of light for 20,000 years; radio apparatus used by Lincoln Ellsworth in the Antarctic.

## Sparks-Withington Shows \$154,561 Profit in Year

JACKSON, Mich.—Net profit of \$154,561, after deductions for depreciation, Federal income tax, and other charges for the fiscal year ended June 30 was reported last week by Sparks-Withington Co.

After payment of annual dividend requirements on 6% preferred stock on which there are accumulated unpaid dividends, this profit equaled 15 cents per share on 900,674 shares of no-par common stock.

## Two Office Building Installations



The air-conditioning cabinets and supply fans which condition air on the third floor of Chicago's Wrigley building are shown in the top photograph. The bottom illustration shows the condenser water pump, strainer, and portion of the 12-inch condenser water piping. Water is taken from the Chicago river and discharged back into it.

## Wrigley Buildings Air Conditioned

CHICAGO—One of the largest and most interesting air-conditioning systems placed in operation here this past summer was in the well-known North and South Wrigley buildings, 400-410 North Michigan Ave.

This system, engineered and installed by the Kroeschell Engineering Co. and Joseph F. Darlington of Winston & Co., agents for the Wrigley buildings, embodies the latest design and equipment in the art of air conditioning for large buildings.

The entire first, second and third floors and all tenanted areas in the basement and sub-basement of both buildings are completely air conditioned, proper temperatures and humidity being maintained throughout the year. This includes all studios, offices, and public auditorium for broadcasting station WBBM, where all duct work is acoustically treated and isolated from the building structure.

### 16 Central Systems

To properly take care of the varying loads and requirements encountered in the two buildings a total of 16 central air conditioning systems have been installed. Each air conditioner is complete with fans, filters, finned type coils, a humidifying device, and a separate system of air distributing ducts.

Correct temperatures and conditions are produced throughout the year by means of water circulated through coils in the air conditioners. A novel feature is the use of the same coil for both heating and cooling.

This not only makes for simplicity, officials of Kroeschell Engineering Co. point out, but enables all of the equipment to be concentrated into small spaces.

### Water for Cooling and Heating

The same water circulating piping which conveys chilled water to the coils in the air conditioners in summer for cooling and dehumidifying, is used also to convey heated water to the same coils for heating during the winter months. This water, either chilled or heated, is in constant circulation throughout the year, the temperature being automatically controlled to counteract weather conditions.

A 340-ton capacity centrifugal water vapor refrigerating machine, driven by a 350-hp. electric motor, chills the water for summer cooling and dehumidification.

No gases or chemicals of any kind are used in the refrigerating system. Everything is accomplished with water.

Another unusual factor contributing much to economy of operation is the fact that river water at a small pumping cost is used for condensing purposes. This water is returned to the river after it has been used in the refrigerating machine.

## Parts Manufacturers Plan Exhibits for Convention

DETROIT—Seventeen members of the Refrigeration Supplies and Parts Manufacturers Association met at the Statler hotel here Tuesday with Secretary Frank J. Gleason to lay plans for exhibiting at the national convention of the Refrigeration Service Engineers Society in Memphis, Nov. 10. The association of parts manufacturers will meet concurrently with this convention.

At the noon luncheon Editor George F. Taubeneck of AIR CONDITIONING and REFRIGERATION NEWS discussed potential business for parts manufacturers in foreign markets, and related some of his experiences on his recent seven months' trip around the world.

Those present at the meeting, in addition to Secretary Gleason, were: J. D. Colyer, Wolverine Tube Co.; H. E. Reickelmann, Fedders Mfg. Co.; J. S. Forbes, Kerotest Mfg. Co.; I. J. Knudson, Detroit Lubricator Co.; K. B. Thorndike, Detroit Lubricator Co.; F. U. Webster, Cutler-Hammer, Inc.; H. B. Trix, American Injector Co.; F. B. Riley, American Injector Co.; H. Hunsinger, Square D Co.; Ivan Corcoran, Square D Co.; C. M. Brown, Tecumseh Products Co.; R. W. Kritzer, Peerless Ice Machine Co.; E. A. Valee, Automatic Products Co.; Chas. W. Johnston, Virginia Smelting Co.; D. H. Daskal, Perfection Refrigeration Parts Co.; L. L. Hosier, Mayson Mfg. Co.; and Mr. Hefler, Zenith Carburetor Co.

One dollar will pay for a short-term subscription to the NEWS starting with the Sept. 9 issue (Tenth Anniversary Number) and running through to the end of the year. (This rate applies to U. S. and Canada.)

## Program Drafted for Porcelain Meeting

(Concluded from Page 1, Column 2)

Production"; Richard H. Turk, Porcelain Enamel & Mfg. Co.—"The Importance of Technical Research"; Earle S. Smith, Toledo Porcelain Enamel Products Co.—"Demonstrating for Greater Sales"; H. D. Chase, Chicago Vitreous Enamel Product Co.—"Why We Advertise"; George P. MacKnight, Porcelain Enamel Institute—"Spreading the Gospel of Porcelain Enamel"; Emory L. Lasier, Titanium Alloy Mfg. Co.—"What Do You Think of It?"

Meetings of the frit, jobbing shop, sign, and table top divisions will occupy the afternoon sessions Thursday. Industry members will attend the Great Lakes Exposition that evening to inspect the Porcelain Enamel Building and other points of interest.

Annual address of R. G. Calton, Institute president and vice president of the Tennessee Enamel Mfg. Co., will open the meeting of the convention proper Friday morning, following which William Hogenson, treasurer of the Institute and president of the Chicago Vitreous Enamel Product Co., and George P. MacKnight, Institute secretary, will make their annual reports. Election of a new board of trustees and announcement of budget plans will conclude the sessions.

An address by Ernest A. Gross, assistant counsel, National Association of Manufacturers, and an Architectural Forum, presided over by Bennett Chapple, of the American Rolling Mill Co., will conclude the convention.

Institute officers for the past year were: R. G. Calton, president; F. E. Hodek, vice president; Emory L. Lasier, vice president; George P. MacKnight, secretary; and William Hogenson, treasurer.

## St. Louis Utility Offers Prizes for Range Sales

ST. LOUIS—Local electric appliance retailers are competing for a total of \$1,500 in cash awards in the fall drive for electric range sales sponsored by Union Electric Light & Power Co. Both dealers and utility salesmen are barred from this contest which started Sept. 15 and runs until the close of the year.

The sponsoring utility will offer not only free installation to purchasers during this campaign, but will also grant a \$5 bonus to retailers for each range sold and placed on the utility's lines during that period.

The sales campaign will be supported by extensive advertising and promotion work in which both the utility and Electric Cookery Council will participate.

## This Seal Is IMPORTANT



TUBING  
Tubing must be clean and bright when you get it. To prevent the inside surface of Wolverine Seamless Copper Tubing from losing its original luster, we solder-seal it.

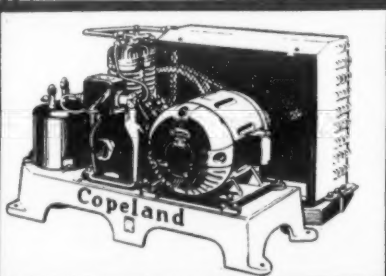
- Your jobber has ample stocks.
- Use Wolverine, the preferred tubing.

### Wolverine Tube Co.

1413 Central Avenue  
DETROIT, MICH.

SELL THE LINE THAT IS KNOWN EVERYWHERE FOR

Time-Tested PERFORMANCE



**Copeland**  
COMMERCIAL  
REFRIGERATION

- THERE is no substitute for experience. In electric refrigeration when one thinks of "experience" the name COPELAND instantly comes to mind. Copeland has been active in this industry since the beginning. The years have taught the best, most accurate and precise methods to build smoothness, stamina, and long trouble-free operation into every unit we produce. Copeland distributors know the time-tested performance of Copeland units—and sell with confidence. You should handle this great line. A few territories are available.

COPELAND REFRIGERATION CORPORATION  
Manufacturers of a complete line of Household and Commercial Refrigeration  
Holden Ave. at Lincoln ... DETROIT, MICH.

**Copeland**  
DEPENDABLE Electric REFRIGERATION

Hello, U.E.I.?

Can You Furnish me a

TRAINED

REFRIGERATION MAN?

We train men for positions in the Refrigeration and Air Conditioning Industry. We realize that in this work we owe a duty to the industry as a whole as well as to our students. We know that if we are to benefit our students, they must be trained the way you want them to be trained.

Therefore, leading manufacturers have cooperated in preparation of the U. E. I. Courses in Electric Refrigeration and Air Conditioning. When you hire a U. E. I. man, you may be assured he "knows his stuff". He is practically, thoroughly and authoritatively trained and capable of rendering efficient service to you.

UTILITIES ENGINEERING INSTITUTE

404 N. Wells St. Founded 1927 17 West 60th St.  
Chicago, Illinois New York, N.Y.



Do You Need a Man for Shop, Installation, Service or Sales work? The U. E. I. Placement Service can recommend a man to fill the position. We have men available in all parts of the country. LET US SERVE YOU



## Personal Leadership of Salesmen By Dealer Will Beat Mail Order Competition, Says Pat Quinlan

By Winifred B. Hughes

REDFORD, Mich. — "The owners have lost contact with their business—that's what's wrong with appliance selling today," vehemently declared Pat Quinlan, manager of the Rosedale Appliance Shop in this shopping center near Detroit. "They've put the responsibility off on the shoulders of a sales manager, or supervisor, who isn't equipped to take it."

Mr. Quinlan's statement was prompted by his opinion that the interview with Dearborn (Mich.) dealers, published in the September 2 issue of REFRIGERATION NEWS (which stated that competition from mail order houses was one of that city's major merchandising problems) was "a damaging assertion."

"Of course, we all have the mail order and department store competition as a sort of bogey man, but its unimportant. Good salesmanship can beat it any day in the week."

### Better Equipped Men Win

"It isn't always true that there is strength in large numbers. You can take a big dealership with 50 or 60 salesmen, or one with 20 men, pit against them a smaller dealership where the owner or manager sees that his salesmen are thoroughly equipped, and the small one will come out on top."

"The trouble is with the salesmen and the supervisors themselves. Why, seven out of 10 of them can't even give a demonstration of the product which they are selling. I challenge some of them to prove it. A good demonstration minimizes mail order competition. Besides," he added, "I'd say that only about 20 or 30% of sales of a dealership in a small outlying town like this are affected by this type of competition, because 70% of our business is done on the outside, through canvassing, and you don't run up against this except with the 'shopping' buyer."

### Big Stores' Staffs Deficient

As proof that the supervisors and salesmen who direct the activities of large-staffed retail stores aren't doing the right kind of jobs with their men, Mr. Quinlan told of a salesman whom he had hired recently, who had been with a big appliance store and who hadn't the vaguest notion as to how to fill out a contract.

"Salesmen should be made to qualify for the job. In most places the new salesman has a pretty picture of about how much he can make painted for him by the one who hires him. This isn't our way. We make the men qualify for the job before we take them on."

Mr. Quinlan showed, by his record books, how several different prospects who were only in the market for one appliance were sold two major appliances when the salesman finished his job.

"Just yesterday a lady came in to buy a flat iron, and one of our men showed her an ironer. He took it out to her house for a trial demonstration, and she bought it."

### Morning Sales Meetings

Half-hour morning sales meetings in which the men are expected to ask questions, and at which one man must give a demonstration on any of the appliances carried, is the method which the Rosedale shop uses to keep its men on their toes.

Established in Redford since April, the shop has five salesmen, and their sales records bear out Mr. Quinlan's assertion that it isn't always true that there is strength in numbers. Starting with two men, the company had six sales to its credit in its first eight days. Its June business totaled \$3,800, and during July, when four salesmen worked the territory, it had 20 sales for a volume of \$6,300.

August, a slow month, still had 18 major appliance sales, and September sales are brightening up considerably, Mr. Quinlan said.

### Harmony Second Essential

Next to having equipped salesmen, Mr. Quinlan believes that harmony in the sales organization is the second essential to successful dealer business. "It's only when you have harmony among the men that you make money—and there can't be harmony unless the men are making money."

Returning to his plan for training the new salesmen, Mr. Quinlan said that when the new man applies for a job, he first talks to him for a couple of hours, telling about the business, and noting the man's reactions to what he hears.

Then he drives the man through the territory so that he can see where he will be working and the type of people with whom he will deal. "Then

I tell him to go home and think it over, and discuss it with his wife, if he's married; decide if he really wants the job, and come back next morning."

Working with the man on his first sales and holding the regular morning meetings are the completing steps in the neophyte's training course.

Second day of the course, the men are taught the conversational parts of their selling work.

### Sales Talk Must Interest

"If you can put up an interesting sales talk, you can usually sell a refrigerator. But so many salesmen never learn this. Take vacuum cleaner salesmen. Do you think they are sent off half-cocked, not knowing what

they're talking about? Of course they aren't."

Group selling is what the salesmen for Rosedale Appliance Shop aim at. They are trained to be able to sell and to demonstrate any of the appliances sold by the store. "Our motto is, 'Nine houses out of 10 need something electrical'—I'm going to hang it up on the wall some day."

Last week, the store donated a Kelvinator refrigerator as first prize at a fraternal order's annual picnic out at Edgewater Park. To be eligible in the drawing, those present had to fill out a blank, giving their name and address, stating whether or not they had any of the five major appliances, and if a Rosedale salesman could call.

About a thousand cards were returned, some of which refused permission for the salesmen to call.

### Direct Mail Campaign Planned

The names will be checked, and followed up with direct-mail letters, after which they will be divided among the Rosedale salesmen, with each man getting seven or nine prospects per day.

Mr. Quinlan believes the idea is a money-maker. His men agreed beforehand that they'd work extra hard on

the prospects, to offset the cost of the refrigerator that was put up as the prize.

Little straight newspaper advertising is done by the shop. One sort of advertising that has brought results, however, is a weekly four-page broadside, about the size of the News.

The whole publication is devoted to a single appliance each week. One week it's refrigerators, the next washers, the third ranges, etc. Boys are hired to distribute the broadsides—and the salesmen check up on them, to see that they don't throw any into the gutter.

### Canvass Follows Broadside

After the broadsides have gone out, the salesmen make their canvass, with the broadside and its contents for the current week as the entering wedge. After they get inside, they are free to talk about anything the housewife happens to be interested in.

Mr. Quinlan says it's "a damn good idea"—and it sells appliances.

Salesman turnover is cut to a minimum when the dealership operates on the principle that fewer and better trained men are preferable, Mr. Quinlan believes.

Price cutting, in Mr. Quinlan's opinion, is the floor salesman's prob-

lem, not that of outside men. "You'd be surprised at how little of that is being done around here today," he added.

"The dealer located in an outlying town has a little different situation to cope with than big downtown dealers do. When he delivers a box to a home, he has to be mighty sure that it is in perfect condition."

"You have to make a friend of every customer here, because if you don't you lose sales. When one woman gets a new refrigerator, what she thinks about it is pretty nearly town knowledge in a short while."

"If the salesman misrepresents the merchandise or the service, everyone knows about it before long. The neighborhood store must have perfect merchandise, perfect service, and good salesmen."

### Correction

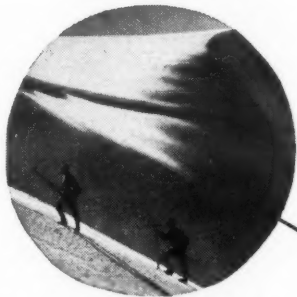
The News erred last week in reporting, in the story of the combination of Caswell, Inc., and General Electric Supply Corp.'s Detroit branch, that the Supply Corp. had dropped distribution of the line of Hotpoint appliances which it handles.

G-E Supply Corp. continues to be Hotpoint distributor in Michigan.

## HOW TO SELL MORE REFRIGERATORS

# Illustrated

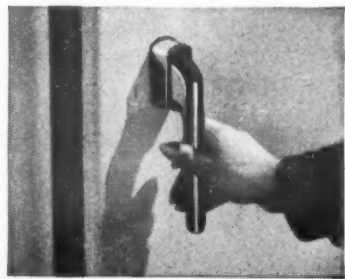
The pictures show why more than 3,000,000 refrigerators have already been finished with DULUX... how you can make use of DULUX with profit.



Better even than original whiteness is the ability of DULUX to stay white and keep its sanitary appearance. Dirt and dust find no places to lodge on its smooth, hard surface. Here's a test that proves it:

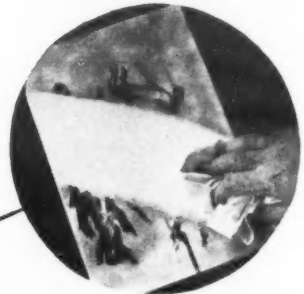


Dirt is rubbed onto a panel that has been finished for 30 days. This is a more severe test than just touching your fingers to a refrigerator door. We tap the panel and shake off the loose dirt. Note how it has left the finish. DULUX does not pick up smudges and dirt.

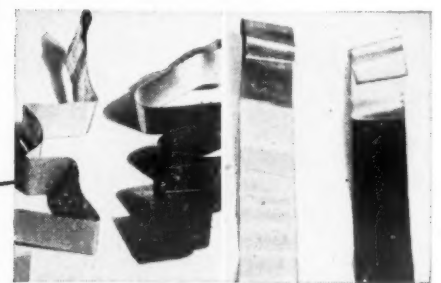


It's easy to get grease on a refrigerator door, especially around the door handle. These deposits of grease and oil cause yellowing of ordinary finishes. They mar its beauty. DULUX resists household oils and greases.

DULUX resists corrosion. Two panels were "weathered" for 13 months. Left panel has orthodox finish. Right panel finished with DULUX. Note the corrosion on left panel. The right panel shows DULUX still unbroken, proving its great resistance to corrosion.

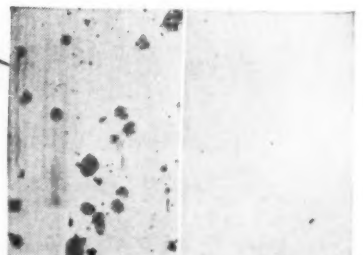


DULUX seldom needs cleaning. Yet it can be washed easily and often. Here's a DULUX surface marked up with red and black inks and smudged with dirt and dust. See how clean and white the surface becomes after washing with soap and water.



Here's proof of the flexibility, toughness and unusual adherence of DULUX finish.

Tin strips finished with DULUX were stored for two years. Then they were bent as shown on the left and straightened (right). The finish remained unharmed.



Women see the pure, clean, snowy whiteness of DULUX finish and want it in their kitchens. It's the whitest white they ever saw.

In developing a modern finish for refrigerators Du Pont chemists sought a different material—one with new features, but with features that would be ideal from the housewife's viewpoint.

Du Pont DULUX, in its materials and composition, is a new chemical development. It is one of the most notable organic finishes of all time. How it meets the desires of the housewife—your cus-

tom—see in the pictures and their captions.

Sell all these DULUX advantages. Sell original beauty... lasting beauty... and amazing durability. Sell economy in maintenance.

For the complete story of DULUX, get FREE copies of a booklet, "Selling Made Easier by DULUX." Send to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Del.



# DULUX

REG. U.S. PAT. OFF.

for refrigerators



## Around the World

With George F. Taubeneck

Something about what is happening, and what may happen, to the refrigeration business in war-torn Spain is indicated in this, the 38th consecutive instalment of the editor's "World Series" articles, written after a seven months' tour and survey of foreign markets for refrigeration and air-conditioning products.

In the Sept. 16 issue the editor told of his experiences in Spain just before the outbreak of hostilities, and the difficulties under which individual distributors were then laboring. The current issue contains random impressions of the country and the people in Spain.

Next week the travelog will drop back to pick up a story on the historic Isle of Malta, and proceed thence directly into Paris. All the photographs in this "World Series" were taken on the spot by the editor.

### Late Hours

I saw France and Spain in one day. That's literally true—although I spent considerably more time in each country.

Disembarking at Marseilles before 6:00 a. m., I spent a most hectic time in that city before catching an Italian plane for Barcelona, where I arrived late in the afternoon.

Counting the time in the air, and on the *S. S. Naldera*, I was under the sovereignty of four different nations—England, France, Italy, and Spain—during 12 hours.

Spain was not on my original schedule, and so it was necessary to get a Spanish visa in Marseilles before taking the plane. That was quite a job, made more so because there seems to be comparatively little English spoken in Marseilles, and the French is a strange dialect, one which left me hopelessly stranded.

The *bouillabaisse* I had for luncheon however, made me willing to forget all my annoyances. Too, the four-motored Italian seaplane was a joy. It had two long boat-like cabins suspended from the single plane. Motors were mounted above the wing. It looked much like the type of plane which General Balbo's squadron flew to the Chicago Fair in the summer of 1933 from Italy.

First sight of Barcelona was from the air. It is a great industrial city, as well as an important port; and as we dropped down into the harbor I saw a great section of smoking factories, obviously constructed for line production.

Back to "civilization" again!

And then when I found out what sort of a city Barcelona is, my mounting spirits reached an apex. It is a busy city, a beautiful city, a gay city.

But best of all, it keeps late hours.

This getting-up-at-dawn business, customary throughout the tropics, had just about put this poor journalist beneath the sod. But in Barcelona, business men come down to work about 10 a. m., and leave after 6 p. m. Dinner is generally between 9:30 and 11 p. m. Theaters open at 10:30 p. m. for the evening performance; matinees run from 4:30 to 8:30.

### Nice People

I'd had scarcely any theatrical entertainment on this trip, so one night in Barcelona I went down to the world-famous Teatro del Comico, and bought a ticket for the evening performance of some musical comedy (couldn't translate the name).

After purchasing the ticket, I had three hours to wait before the curtain

call. Down the street was another theater, where the matinee was still in progress.

Here the attendants could not speak English, but we got together after a fashion in French. They assured me that I wouldn't be able to understand a word of the play in progress, and that the last act was on, anyway.

But, I gestured, I should like to see what it looked like, anyway. Could I take a peek through the glass in the door?

They smiled broadly, conferred excitedly with one another, and then with a bow and a flourish, one led me aside and down to an excellent seat! No charge.

That was typical of the Spanish nature, of the rich generosity of the Spanish people. None of your English "you can't do that" attitude; rather, it is "what can we do to make you happier?" Instead of the uplifted eyebrow, the stranger receives a smile.

After the Spanish play had concluded, there was still an hour and a half; so we dropped into a cinema. There a German film was showing. All the talk was German; Spanish subtitles were flashed along the bottom of the screen during the course of the action. Try and figure out the plot from that combination! It was fun though.

Then the Teatro del Comico. The show lasted until 1:45 a. m., and was a humdinger. Chiefly I noticed the settings, which were more splendid and better wrought than anything I could remember seeing on Broadway. The *senoritas* were all right, too.

Music was nothing extra, and the dancing was not good at all. But the lines must have been hilariously funny, for I haven't heard an audience laugh so hard, so long, or so loud since "She Loves Me Not."

## Marseilles and Spanish Street Scenes



1—Wide, well-shaded promenade in downtown Marseilles. 2—An old Spanish senora, too tired to carry her jar of water away after she has filled it, falls asleep by a well. 3—Spanish village street, with typical Moorish architecture. 4—What those lovely senoritas grow into after 10 years (right foreground).

But of most of the jokes was an "Americano," dressed in a cowboy outfit, who occasionally uttered a few words of horrible English.

That was an abrupt introduction to the fact that in Europe Americans are considered comical *per se*.

### Castles in Spain

The Fawcetts took me to see a game of *peloute de basquette*, which is something like glorified handball.

Players wear a sort of basket strapped on one hand, within which they catch the ball, and from which they cast it with blinding speed.

At Mrs. Fawcett's suggestion, I took a cab Sunday noon out to some public squares to watch the folk dancing.

This was really a treat. While a funny little band (using some weird woodwinds which looked something like home-made bassoons and oboes, and sounded like a cross between bagpipes, clarinets, and an Indian snake-charmer's pipes) played typical folk music, hundreds of people joined hands and danced.

They formed rings of indiscriminate sizes, and did simple little steps in unison. Dancers ranged from 12-year-olds to grandparents. It was delightful.

After the dancing I went out to Bona Nova to have lunch with the Fawcetts, and in this charming suburb I saw some genuine "castles in Spain." Outside of the Moorish architecture, chief point in their favor is the excellent taste of the landscaping and the abundance of flowers.

Later we went up to the exposition grounds, and climbed to the top of the MIRAMAR from which an excellent view of the city may be obtained. From here to a point across an arm of the harbor there's cable car transportation over a colossal system which makes the Sky Ride of A Century of Progress exposition in Chicago seem almost like a children's toy in comparison.

Spanish countryside is charming, and is mellowed by age. The fortunate barrier of the Pyrenees mountains has saved Spain from much of the warfare which has so ravaged the remainder of Europe, and hence things have been allowed to remain unharmed and undisturbed for centuries.

Some of the homes of the land-owners are indeed castles. The terrain is rolling, and made colorful by the vineyards. Many of the coastal seascapes are magnificent.

Streets are paved with tiny bricks, and the sidewalks with small, slim stones, set in regular, geometrical, symmetrical patterns.

The lavish, ornate Moorish architecture is a hangover from the days when Spain was a Mohammedan country, parcel of the vast Moslem Empire which ringed the Mediterranean and blanketed the Near East.

Most interesting feature of Barcelona is the Rambla, an unusually wide boulevard, with the center—which

occupies three-fourths of the width—reserved for pedestrians.

Here all Spain seems to be walking, especially in the evening before dinner. It's an endlessly fascinating sight.

Along the sides of this great walkway are great bowers of cut flowers for sale, and stands where one may purchase magazines and newspapers.

Apparently the Spaniards are great readers. They have scads of periodicals, many of them excellent. Some of the finest rotogravure work I have ever seen was contained in Spanish periodicals I purchased at these stands.

Especially handsome pictorially are the movie fan magazines (every country I have visited prints its own movie magazines, in addition to importing them from the United States.) Almost anywhere in the world you'll find *Screen Book*, *Photoplay*, *Movie Mirror* and other Hollywood publications on sale. Once-in-a-while you can pick up a *Saturday Evening Post*; less often *Colliers*. Anything else from the U.S.A. is unknown.

### Warnings

Do your train travelling in Spain in the daylight. A sleeper berth costs about \$10 for a 200 mile trip.

Learn how to say "Where is the men's room?" in Spanish. If you should happen to see a door marked "CABALLEROS," that will be it.

### Sudden Transition

The old crust of romanticism yet surrounds a Spain which has begun to bustle with the wheels of speeded industry. But still in the hills of the Basque country, shepherds watch over their flocks during the long night. Hence Spain's people, to fit the picture, must be a composite of the old and the new. Perhaps that inner conflict caused by the sudden juxtaposition of the machine age upon the age of chivalry is one of the underlying causes of Spain's present troubles. The transition has been too sudden, the change too drastic for a people which time passed by to assimilate.

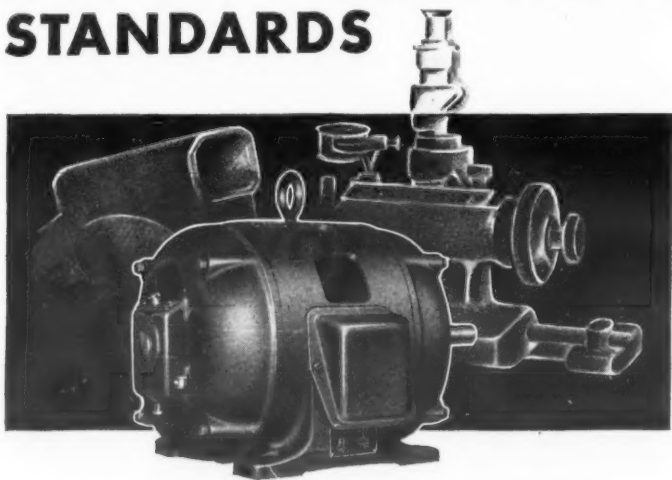
Entering almost any of the small, hill-cradled towns (most of the smaller Spanish towns are situated on hills) one senses the romantic touch that is Spain's charm. The Moorish gateway, dark, massive, suggestive of privacy and strength, speaks of battles fought centuries ago to break into its arched seclusion.

Inside, among the people, there is much to substantiate the romantic ideal of the splendid chivalrous Spaniard who must be brave and meet death or torture with fierce determination.

Much of the Moorish influence can still be found in Spain and in the Spanish people. Moorish invasion of Spain wrought a decided change on its physical properties. From the 8th to the 15th century Spain was under Moorish dominance—in which time the conquered absorbed much of the conqueror—and the reverse was also

(Continued on Page 5, Column 1)

## These PRECISION MOTORS MAINTAIN PERFORMANCE STANDARDS



Because they are built to accurate and precise tolerances—with more than ample mechanical strength in the frames, end brackets, shafts and supporting members—Century Polyphase Motors help maintain the original satisfactory performance of the equipment and machinery they drive.

Keep themselves clean inside in the presence of dust that will not harden with heat nor solidify with high humidity—Easy to keep clean outside—Remarkably free from vibration—Harmonizing appearance.

Quiet Starting—Quiet Running

**Century**  
MOTORS

CENTURY ELECTRIC COMPANY  
1806 Pine Street • St. Louis, Mo.  
Offices and Stock Points in Principal Cities

DIRECT CURRENT • SINGLE PHASE • SQUIRREL CAGE • SLIP RING  
UP TO 600 HORSE-POWER

## Street Dancing on Sundays



1 & 2—Public dancing is enjoyed by young and old in Spain on Sunday afternoons in the parks and squares. 3—Spanish children seem as healthy and happy and guileless as American children, as they wait for the dance band to resume playing. 4—One of the innumerable flower stalls along Barcelona's famous Prada.



# Around the World

With George F. Taubeneck

(Continued from Page 4, Column 5)  
true, especially from an architectural point of view.

Within this time Spain enjoyed a heightened degree of civilization. Arts, sciences, industries, inventions, culture, were given new impetus and new development.

The Moors who conquered Spain were chiefly nurtured in precocious North Africa. Primitive Spaniards were themselves of African extraction—so that the re-adjustment at the time of the Moorish conquest was less severe than might appear at first thought.

Spain's houses with their graceful grilles windows, and charming garden-surrounded patios, bear the unmistakable stamp of Moorish influence. Especially can Spain be grateful to the Moors for its beautiful gardens, something in which the Mohammedans have always excelled.

Spanish people also bear the imprint of oriental invasion in their physical make-up, in their rich, olive-colored skin, long-shaped heads, lithe and vigorous bodies—Eastern characteristics which are unmistakable. All in all, the Spaniards are not true Europeans, a fact necessary to an understanding of the national character.

Moreso than the men, do Spain's women resemble orientals. Many of them have dark, narrow-formed African faces as they have slow, sinuous bodily movements, and fire-flashing brown eyes. A Spanish girl walks like Jean Harlow, looks like Dolores del Rio, and acts like Lupe Velez.

Romanticism, excitement, action—three qualities inherent in Spaniards today, are not always attributed to them by outsiders. But in their dances, in their love of bull fights, in their passionate revolutions, in the religious celebrations which, up to the present troubled times, were so vital a part of their lives, these characteristics are evidenced.

Before he finds out that the seemingly lethargic siesta-loving Spaniards are even greater lovers of action, the visitor in Spain becomes acquainted with the delightful courtesy and affability of the people.

This courtesy one meets everywhere. It is so often proffered in such extreme simplicity that the American, accustomed to expecting scant favors from all but his friends, used to paying royally for what he gets, is almost suspicious of this Spanish trait.

The landlord of the smaller type of Spanish inn can be cited as typifying this characteristic. His guests are treated with a hospitality that is similar to that existing among families in America's "Old South." Courtesy is displayed even by the beggars who profusely thank those whom they ask for alms—whether or not they receive anything.

In their love of dancing the native fire and passion of the Spaniard are revealed in full flower. To Spaniards dancing is a serious thing. Originally an outgrowth and expression of religious fervor, eastern in origin, most of the dances are truly dramas—whose symbolism may be love, or religious feeling, or pathos, but the action of which is sheer emotional ecstasy.

Introduced but recently to America, the *bolero* is one of Spain's most characteristic dances. But there is a decorum and a grace, as well as primitive fire, to this dance as it is done in Spain.

Other Spanish dances are the *jota*, danced by a woman alone, or the *Aragonese jota*, danced by a man and woman. Vivid, quick movement, vivacity, and gracefulness are characteristics of these dances.

Spain's *gitanos* or *gypsies* are its best dancers. Especially worth mentioning is the *flamenco* dance of the gypsies.

In this dance the spectators take active part. Grouped in semi-circle, they clap their hands and sway in rhythm with the guitar strumming and singing of one of the group.

Then a gitana rushes from the group, advances to the cleared central spot, and begins to sinuate. Her dance is not one of the feet alone—her hands, her eyes, her fingers, her body all get into a mood which is one with her fast-moving feet.

Given a dark-haired, laughing-eyed *senorita*, wearing a bright-colored shawl, the languorous musing song, softly clapping hands, and a group of tense, excited spectators—the dance becomes, to the visitor, just what he had imagined Spain as being like. In other words, your money's worth.

This dance is most truly representative of another Spanish characteristic—the love of elemental sensation. After seeing a Spanish dance, it becomes a little easier to understand the apparent cruelty which lies behind the people's love of bull fights, and also that cruelty is shown repeatedly in Spain's paintings and works of art.

To write of Spain—the dominant traits of its people—one cannot neglect to write about its bull fights. Even though we didn't see one, our Spanish friends told us about them.

Although the idea seems fantastic that religion has always been closely associated with Spain's national sport, still our informers say that this is true. Most bull fights are held on Sunday; the greatest of all is held during Holy Week.

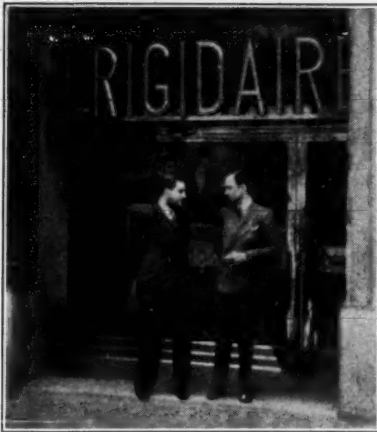
Almost all of the large bull fight rings have had a chapel somewhere on the grounds—where the participants could pray before the start of the fights. The entire proceedings are ritual-like in their multiple ceremonies.

There are three distinct divisions—three separate sets of acts in the bull fight drama, and three separate sets of actors. After the *paseo de la cuadrilla* (in which the bull-fighters parade before the spectators, bowing and being cheered) the drama begins.

First the *picadores*, mounted on blindfolded horses meet the charge of the bull and thrust him aside with long pikes. When the bull is aggravated and tired, their work is done.

Second act belongs to the *banderilleros*, whose chief action is to inflame the bull. Barbed darts, each about two feet long, are driven into the shoulders of the bull. Great skill, agility and bravery are required in this pleasant little dart-throwing game.

## Waiting for Business



L. M. Rifa (left), Frigidaire distributor in Spain, awaits customers before his Barcelona showroom.

Finally the climax approaches, as the *Suerte de Matar* enters the ring. With short Tolstan blade and a red cloth (*muleta*) he advances toward the bull. Unhurriedly he seizes the propitious moment to drive home the blade in the bull's neck. The action over, the roaring crowd tosses flowers into the ring.

While all this takes place the Spaniards present in the audience exhaust the category of their emotions.

Sometimes six fresh bulls are carved up before a day's spectacle is over, after which the true fan is as limp as a rag, while the foreign visitor is probably ill.

Despite the kindness, deep-seated affection, and courtesy which marks the Spaniards' relations with each other and with guests whom they welcome into their midst, their cruelty to animals, and their own disregard of suffering presents a paradoxical strain which is difficult for the stranger in the country to understand.

That same characteristic is making Spain's revolution today one of the nastiest, goriest wars in all history.

## Marseilles

Marseilles is the modern name for the old city of Massilia, built by the Phocceans about 600 B.C., as your young son in high school can tell you. It is the second greatest metropolis in France, and is rightly termed the "capital of Southern France." Population of Marseilles totals eight hundred thousand, and it is a thriving shipping center.

Railway lines link Marseilles with every part of France and of Europe. Local steamship companies send their ships to all ports in the Mediterranean, and trans-oceanic liners frequent the large, up-to-date docks.

Excursion boats chug between the city and the historic Chateau d'If, standing solemnly alone out to sea. Transportation facilities within the city are excellent, there being trams, taxis, and motor buses in abundance.

A continuous parade of big trucks rumbles down to the quays, bringing and taking cargoes of all kinds. The piers are lined with huge warehouses and grain elevators.

Canebiere Street is the central hub of the busy hum of the city, and the outdoor cafes scattered along its pavements are ringside seats from which to watch the flowing life of Marseilles pass in pageant. Just off the waterfront are the famous "dives" frequented by sailors, which we didn't have the opportunity of investigating.

Marseilles has more than its share of artistic and historic landmarks. The ancient cathedral, built on Roman foundations in the twelfth century, is a genuine masterpiece of the architecture of the Middle Ages. Still mysterious—the natives say haunted—are the gloomy Catacombs of St. Victor used as places of refuge by the early Christians. From the venerable Church of Notre Dame de la Garde one may obtain a panoramic view of the city and its surroundings, spread out in a huge semi-circle.

Along the shore of the Mediterranean stretches the Corniche Road, which for four and a half miles is lined with seaside villas and bright bath-houses. On or near the outskirts of Marseilles are a number of attrac-

## Castanetter



Spanish dance—snapshot taken in a Barcelona theater of one of Spain's terpsichorean celebrities.

tive resorts and places-to-see, including Avignon, with its imposing Papal Palace, Aix-en-Provence, once capital of that duchy, and Arles, Montmajour, St. Remy, Nimes and Pont du Gard, all places possessing remains of the proud Roman Empire of which they were once part.

Today's Marseilles regards its ancient heritages somewhat callously, and even indifferently. Today's Marseilles is devoted to hard work and high living.

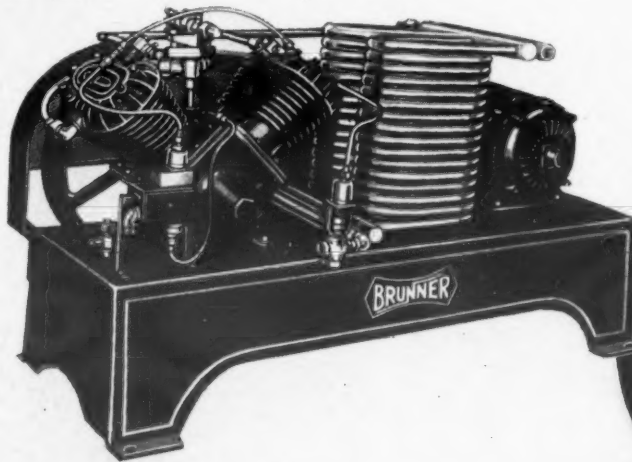
There you see the penurious, thrifty, bargain-driving Frenchman at his Scotch-shaming best (or worst). There also you get the tastiest dishes (we nominate the *bouillabaisse*), and have access to a multitude of what the Bible calls "fleshpots."

Workmen in blue blouses, working girls in black cambric, sailors in

(Concluded on Page 6, Column 1)

## BRUNNER UNITS ARE Safe TO HAVE AROUND

**BRUNNER**



**BRUNNER  
CONDENSING UNIT  
W-300**

A heavy duty 4 cylinder unit designed for large commercial installations. 3 H.P.—water cooled—quiet operating—endurance to spare.

Everything about Brunner Refrigeration and Air Conditioning Units points to safety. Throughout their entire construction they are "gas tight", permanently so. Cooling efficiency is equal to the heaviest demands. Oil sight gauges facilitate adequate lubrication. And of special importance, is the fusible plug in each receiver to insure safety in operation; as well as the two line valves which hold the gas in the receiver for safe shipment... Why not play safe with Brunner equipment? A point-by-point

check-up of the Brunner design—its safety, efficiency, endurance—tells why Brunner today is "The Fastest Growing Name in the Industry"... There's a Brunner cost-cutting model for every requirement from 100 lbs. up to 15 tons of refrigeration. Forty-seven condensing units, five compressor models, air and water cooled, in a range from 1/4 H.P. to 15 H.P. Full details await your request. **BRUNNER MANUFACTURING COMPANY, UTICA, N. Y., U. S. A.**

**BRUNNER CONDENSING UNITS and COMPRESSORS**



## Around the World

With George F. Taubeneck

(Concluded from Page 5, Column 5)  
dungarees, old hags in dirty folds of nondescript, smart mannequins, and tiny-mustached dandies all brush quickly past the visiting pedestrian in this city, whose motto should be:

"Live and Let Live—But Fast!"

### War Front News

With latest press dispatches from the Spanish revolutionary front picturing bomb-torn cities, scores of thousands dead and wounded, and normal business activity paralyzed while the status of foreign interests remains in jeopardy, one might expect to find export managers of American refrigeration companies doing business in Spain wringing their hands as a valuable market goes up in the smoke of battle.

Not so in at least five cases, according to export division heads who answered queries from the News regarding the status of their interests in Spain. From headquarters of Crosley, Westinghouse, Sparks-Withington, Frigidaire, and Carrier comes hopeful news.

Lack of information from their distributorships in the war zone, where thousands of electric refrigerators are stored and bank deposits remain frozen, has caused considerable concern in home offices, but a uniformly optimistic spirit prevails regarding the export trade in American refrigerators when peace is once more established in the warm land of gay caballeros and softly-strummed guitars—a naturally receptive market toward refrigeration in all its branches.

A. G. LINDSAY, manager of Crosley's foreign division, states that he has not been able to contact his Barcelona distributor for three weeks, and that from last communications it was feared that the dealer's stocks had been confiscated.

"As far as our distribution is concerned," Mr. Lindsay says, "when I was in Spain last year, I got a hunch that something more or less serious might happen in that country, even if I had no clear conception just where and how the lightning would strike. At any rate, I took immediate steps last September to retreat from what looked to me an overextended position in Spain. We gradually saw that all our outstandings were paid up and placed all new business this year on a basis of cash in this country."

"Of course, we have undoubtedly lost some business by doing so, but on the other hand, we now have suffered no loss whatever in Spain, and look forward to the future with equanimity."

"It is true that we have a few thousand dollars in pesetas outstanding in Barcelona, but these outstandings are really theoretical, as we have sufficient dollar credits established by our distributors in our favor over here to permit us to protect the unremitted drafts in Barcelona."

Although lack of contacts with distributorships is also reported by R. R. MASSEY, manager of the merchandising division of Westinghouse, he does not feel that refrigerator stocks have been destroyed on a large scale during the war.

"My own guess is," says Mr. Massey, "that perhaps there has not been a great deal of destruction of such products and activities, as the interest of each faction in Spain for the present is more concentrated on weapons of war such as can be turned into transportation and the equipping of military personnel."

"Consequently," Mr. Massey goes on, "our position at the moment as an American exporter to Spain is to sit tight, try to retrieve whatever we can on present assets in that country and observe the direction of the wind after the civil strife comes to an end."

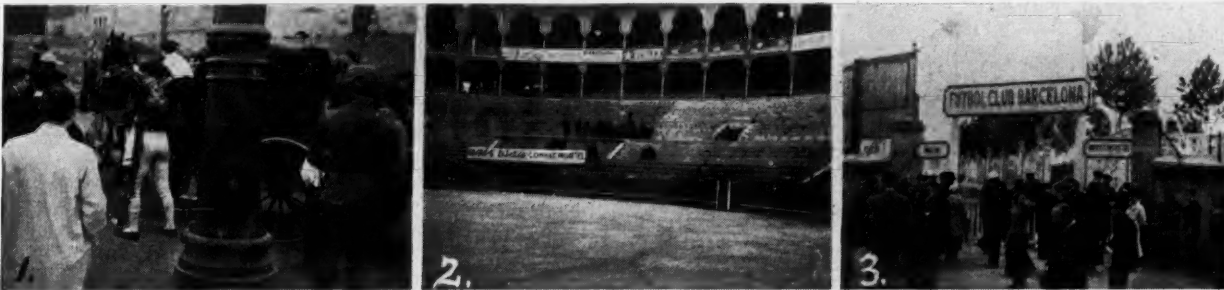
H. O. McCLUMPHA, export manager for Sparks-Withington, states:

"Unfortunately, at the beginning of the difficulty, we had a shipment on the water; and instead of permitting it to go forward to destination we cabled instructions to have the consignment discharged at Lisbon, where it is now being held in a bonded warehouse."

"The above represents the only difficulties that we have encountered; and we have suffered no actual losses of confiscation, damage or any other losses other than, of course, the fact that we have a considerable amount of funds frozen in the bank. In other words, we accepted a deposit of Spanish currency in liquidation of our draft, and are now awaiting the pleasure of the exchange control board to issue the necessary authorization for the remittance of the dollar exchange."

Mr. McClumpha further says that despite present conditions, he has always considered Spain an excellent market for electrical appliances, and

## Soccer Succeeding Spanish Bullfights



1—Spanish bullfighter, in full costume, leaves his carriage preparatory to entering the arena. 2—Interior of a Spanish bullfight arena. 3—Soccer football is fast growing in popularity in Spain. The weekly inter-city club matches are cutting heavily into attendance at the bullfights.

feels that the post-revolutionary trade will be equally gratifying.

H. R. COATE, advertising and sales promotion manager for Frigidaire, and HERBERT L. LAUBE, vice president of Carrier, replied that they were unable to contact their representatives in Spain, and that shipments were at a standstill, but neither one indicated any alarm at the situation or the future of the electric refrigeration business between American manufacturers and Spanish distributorships.

Barcelona, capital of the recently seceded state of Catalonia, is the center of business interests of two American refrigeration companies. One export man replying to the News queries stated that his firm had about \$150,000 in assets frozen in a Barcelona bank. Another believes that business in the Catalan republic may be impeded for several months following the conclusion of the war, due to the fact that Barcelona's warring Communist factions will have to be subdued by whichever side emerges victorious from the present war.

The province of Catalonia decreed confiscation of all private property on Aug. 19, thus virtually seceding from Spain. Catalan troops expelled the rebel forces early in the conflict, and if Spanish loyalist armies are defeated, it is felt that Catalonia will declare itself an independent soviet state.

Observers state it is quite possible that, if rebel forces prevail, they will attack and endeavor to subdue Catalonia as soon as they have conquered the loyal government military divisions.

Possibility that American firms having property in Barcelona and other sections of Catalonia have had their property confiscated or destroyed during the upheaval is felt in several quarters.

Previous to its secession from the Spanish Republic, Catalonia had enacted a series of social and agrarian reform laws of its own and conducted its own affairs with little interference from the Madrid government. In seceding, the Catalan Economic Council wiped out private capitalistic possessions, and turned the province over to "the workers," assuming for itself the powers of regulation of production, monopoly on foreign commerce, collectivization of rural property for later development by the peasantry, collectivization of all big industry, public utilities, and transportation systems, control of cooperatives, control of banks, revaluation of property, commodities, and produce, and establishment of a single tax.

Such far-reaching changes must have a considerable effect on such

### Ice Cream in Favor



Ice cream is just beginning to become popular commercially in Spain. Here is an open-to-the-sidewalk ice cream cabinet in Barcelona.

American concerns as General Motors and the Ford Motor Co., both of which have extensive interests in and around Barcelona.

Some foreign observers for American companies, the query by the News has revealed, hold the opinion that whichever faction wins in Spain, it will take a long time for the country to get underway from a commercial standpoint.

A precarious financial situation is expected to develop at the end of hostilities, according to one answer, and doubt is expressed whether there is a man in Spain who is enough of a Hitler or Mussolini to quell revolts which may break out after the main controversy is settled.

This writer feels that a continuation of Spain's present Communist government will prove a hardship on the shipping of electric refrigerators freely into Spain, and that Spanish industry will be unable to cope with the problems of building its own electric refrigerators for some generations. Italy and Germany, Fascist countries, sympathize with the revolutionists, while France and Russia, socialistically and communistically governed, are in sympathy with the loyalist, or Red regime. A clear-cut decision for either faction will produce corresponding reactions in these other countries.

Another export man notes that following the war a great deal of new building will have to be undertaken throughout Spain, with its consequent modernization of old housing and business facilities, and the opening up of new markets for electric refrigeration. He feels that the revolution will be productive of increased business for American refrigerator, radio, and

home specialty manufacturers when the Spanish people set about the task of rebuilding destroyed cities, homes, and buildings.

One of the export men stated that he confidently believed the rebel armies would win the war, and that the worst part of the conflict will be ended by the middle or end of October.

He also expressed the opinion that instead of setting Spain back economically for a generation, the effects of the civil war will be quickly overcome; and that business, even during the next two or three years, will be "very excellent." Exchange restrictions, which now freeze American capital in Spain, and Spanish deposits on American drafts, will soon disappear after the end of hostilities, he hopes, and Spanish-American business in the future will be on the basis of free exchange without quotas and payment restrictions.

Another states that his company tried manufacturing refrigerators in Spain several years ago, and gave the business up as a bad job. He feels that the refrigeration industry in Spain must continue to rely on American manufacturers for its sources of supply, and therefore American refrigeration men may expect a good market in Spain, as soon as fighting ends. Sales promotion, he notes, is difficult in Spain due to the general commercial backwardness of the people, with Barcelona being the most progressive section, while Madrid, the capital, is the most backward.

If the Fascist, or rebel, element wins, and Spain comes under the rule of a hard-fisted dictator, according to one man, the electric refrigeration business will boom, due to probable absence of tariff restrictions under that form of government. On the other hand, if the present Communist rule prevails, he feels that new tariff barriers will be erected which will preclude any possibility of a favorable trade balance being established.

It is the opinion of another correspondent that if other European governments kept out of the conflict and allowed the Spaniards to settle their own "differences," the present war would have been settled long ago.

Although one export man jokingly offers to sell "some pesetas at a discount" to the News editor, all replies to the queries regarding the situation in Spain reflect a policy of watchful waiting rather than concern or despair over the war-torn country.

Export men seem to feel that, like many other foreign trade difficulties, the situation will eventually remedy itself.

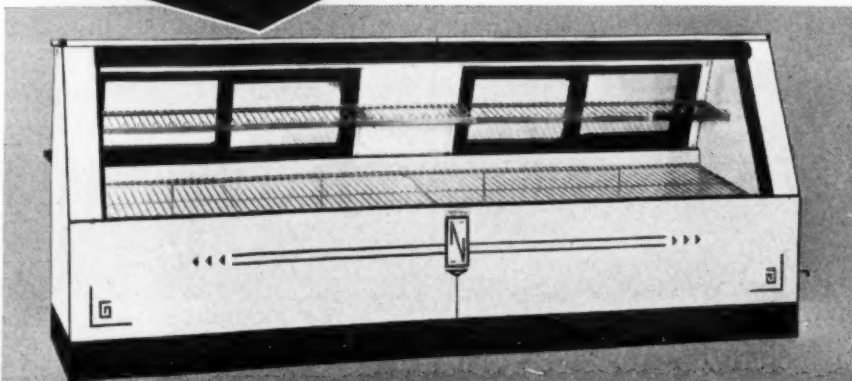
## CONDENSERS EVAPORATORS

33 years specialized experience in this field has qualified us to give you intelligent, practical engineering cooperation on both electric refrigeration and air conditioning applications, large and small.

LONG MANUFACTURING DIVISION  
BORG-WARNER CORPORATION  
DETROIT, MICH.  
WINDSOR, CAN.

# LONG

VIKING INSURES  
LOW OPERATING  
COSTS WITH  
Armstrong's  
LK CORKBOARD



Front view of Viking No. 610RB, 10-ft. Monogram Display Case.

## Build Lasting Efficiency into Your Equipment With Insulation That Stands Up in Service

WHEN you insulate with Armstrong's LK Corkboard, you build into your refrigerator the kind of long-life efficiency that today's buyers demand. That's the experience of Viking and other leading manufacturers of commercial equipment. And it's the reason, too, why these leaders in the field standardize on this dependable insulation.

Made of pure granules of nonconducting cork, Armstrong's LK Corkboard forms a natural barrier to heat and to the efficiency-destroying effects

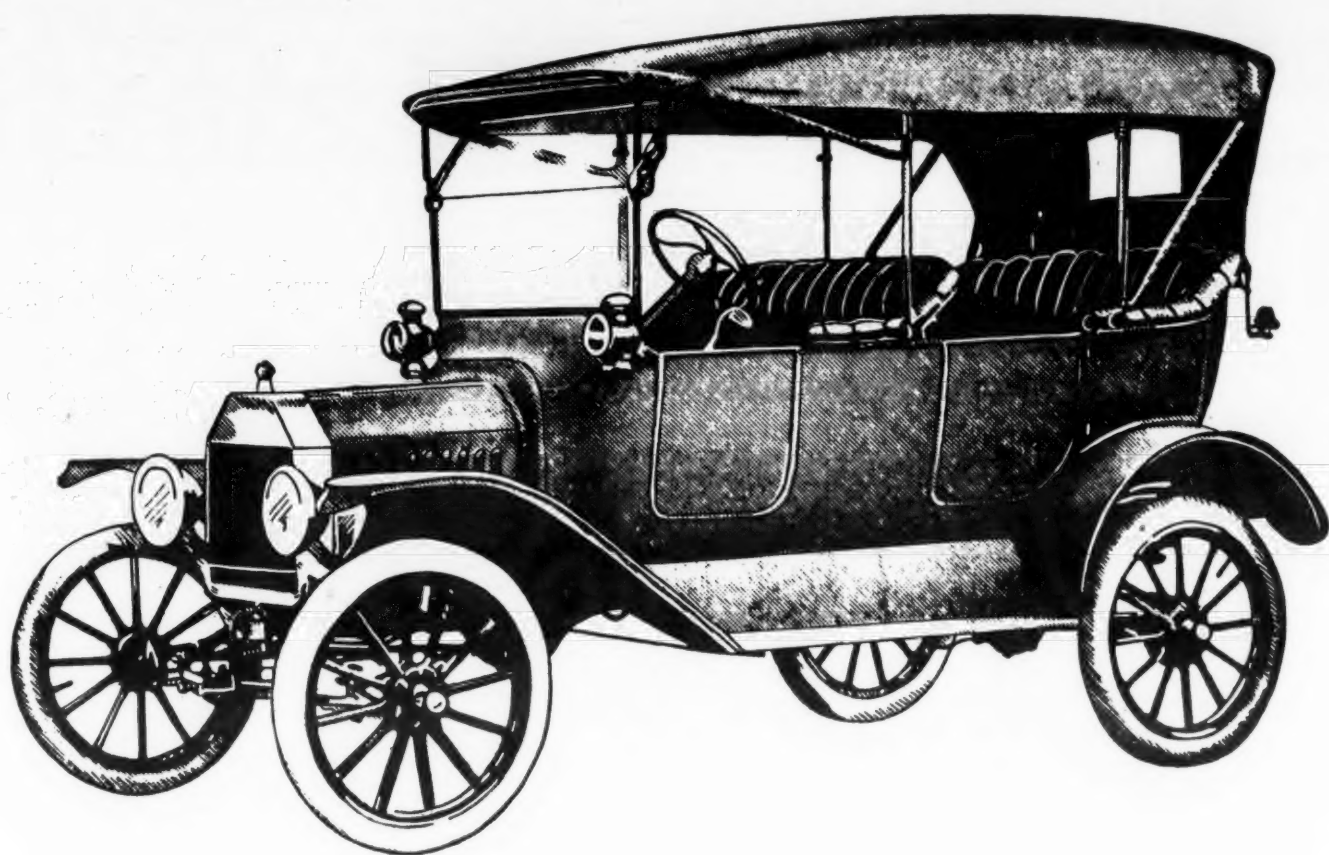
of moisture. It is light in weight yet structurally strong. And because of its rigidity, it cannot settle and pack. In addition, Armstrong's LK Corkboard is fabricated in large-sized boards that are easy and economical to install.

Armstrong's LK Corkboard will increase the efficiency of your equipment . . . save refrigeration dollars for your customers. For samples of Armstrong's LK Corkboard—also Armstrong's Standard Corkboard and Cork Covering—write Armstrong Cork Products Company, Building Materials Division, 924 Concord Street, Lancaster, Pennsylvania.

### For Refrigeration Contractors

Conveniently located branch warehouses in principal cities assure refrigeration contractors prompt delivery of Armstrong's Cork Insulation and Sundries. Ask for the pamphlet, "Armstrong's Insulation Sundries."





## A GREAT AUTOMOBILE — but it is being replaced

*One still sees them on the highways. They still run. The Model T was a great car. Since it first appeared on the scene many improvements have been made in automobile appearance and performance—more riding comfort, more speed, quicker pick-up, better mileage. Most of the old models have been replaced.*

*And so with electric refrigerators. The early models were as far in advance over old methods of refrigeration as the Model T was over the horse and buggy. The first electric refrigerators brought a better means of food preservation, new conveniences and pride of ownership into American homes. They were a great step forward. But again times change, and again old models are being replaced by the new.*

*More beauty in design, more storage space, improved shelf arrangement, faster freezing of ice cubes, lower operating cost are among the improvements found in newer electric refrigerators. Each year the industry moves forward.*

*Today the replacement market in the refrigeration*

*industry is "big business" and it is growing rapidly. Household electric refrigerators, although still serviceable, are being traded in for the newer designs. Obsolete commercial systems are being superceded by more efficient equipment—for better performance and lower operating cost. And through the entire picture runs a steady stream of service work and replacement of parts that forms a big market in itself. Your promotion plans should be designed to obtain your share of this attractive new business.*

*The Product Development Number, November 4, will review important developments made since the early days. Perhaps your company has contributed to this general progress of refrigeration. If so, this special issue offers you an effective setting in which to present your advertising message.*

**PRODUCT DEVELOPMENT  
NUMBER  
NOVEMBER 4, 1936**

**AIR CONDITIONING AND  
REFRIGERATION NEWS**

*Business News Publishing Co., 5229 Cass Avenue, Detroit, Michigan*



## Commercial Uses

### Change from Specialty Selling to Contract Selling Theory Brings 20% Sales Increase to Caswell

By T. T. Quinn

DETROIT—Adherence to a simple set of fundamentals has enabled the revamped commercial refrigeration department of Caswell, Inc., Michigan General Electric distributor, to show a 20% increase in business over last year as of August 31.

"But," says Carl Schurmann, commercial sales manager, "that's no criterion. Wait until next year. By that time we expect to be a factor in at least one-third of all the commercial refrigeration business done in Michigan."

Which is considerable of an advance for the department which was, up to this year, the black sheep of the Caswell family—to put it mildly.

When Mr. Schurmann came up from Indianapolis to take over the Caswell commercial department about five months ago, things were in pretty much of a muddle. Nine salesmen were working the Detroit area, without any definite program; and there were no dealerships outside the city.

Perhaps the "before and after" of the situation may best be described by referring to the map of Michigan which hangs in Mr. Schurmann's office. When he started out, that map was bare. Dotted it now are about 40 black pins—representing 40 dealerships spotted at strategic points. Ten of the small pins have larger ones alongside them—they represent service and installation centers. At a dozen other points are yellow pins—towns in which Mr. Schurmann is angling for dealers at present.

Good coverage, you say? Perhaps. But behind the mechanical working of the department is a definite theory—the theory of changing it from a specialty selling organization to a contracting sales unit.

"After all, that's what commercial refrigeration is," says Mr. Schurmann. "It's simply a contracting business. And if you want to get volume, you have to use that type of selling."

First step in revamping the department was to reorganize the attitudes of the people who were working in it. Nine salesmen were covering Detroit when Mr. Schurmann became manager—of this number, all but two were weeded out. Seven men now cover Detroit, and three more supervise sales in the rest of the state.

Second step was to make the department "record-minded." A great hand for records himself, Mr. Schurmann made it a cardinal rule that every commercial transaction entered

in by the department, from the preliminary survey to the bill of sale, be a matter of record.

Caswell has made 397 commercial installations in Detroit since March 14, and there is a complete file on every one of them.

Third step was to institute a vigorous campaign of sales promotion—and it was no easy task to get a man-size appropriation for a department that previously hadn't been any more than worth its salt.

Mr. Schurmann is a firm believer in advertising of all types, but he thinks that for the kind of business he wants, there's nothing so effective as direct mail. He cites two instances to back up his viewpoint.

Caswell sold 400% of its July quota in water coolers. At least two-fifths of that total, Mr. Schurmann believes, is a direct result of the company's sales promotion activity. Every industrial plant in Detroit was sent a mailing piece early in the month; another pamphlet was sent out to the same list a week later.

Sales leads were obtained from replies sent in to Caswell headquarters. And one order for 110 water coolers was obtained without a sales call of any sort!

Earlier in the year Caswell conducted quite an extensive campaign on milk cooling. *Michigan State Farmer* magazine was selected as the medium, and, through an arrangement with the publisher, direct-mail pieces were sent to all the magazine's subscribers in several selected counties.

Return on the magazine advertising was about 1%; on direct mail, the return exceeded 8%. This is evidence enough, thinks Mr. Schurmann, that direct mail is the type of advertising for his type of business.

His files are filled with direct mail lists of various kinds, and something is always being done with them. Just now, for example, the company is busy with a promotion aimed at ice cream manufacturers—using a mailing list which Mr. Schurmann says contains the name of every reputable ice cream maker in the state.

Another frequently-used list contains the names of every grocery in Detroit with a good credit rating. There are others, covering other lines of commercial activity, ready for use—and others still in process of preparation.

But let's get back to Mr. Schurmann's first step—changing the atti-

tude of the department. By a simple move, he has made his whole organization sales-minded. He has them all on commission—from service men on up. To some degree, the income of every person in the department is dependent upon the amount of business done. Result is that there is a common interest in every job, not only in seeing that it is obtained, but, more important, in seeing that it is handled properly.

Mr. Schurmann's secretary is on a commission over-ride; so is the department's engineer. Service men, by keeping their eyes and ears open, may earn as high as \$20 on prospects turned in by them to the sales department. Lost business to these people, becomes more than a term; it's a matter of dollars and cents. So they're interested in every job—and ready to help swing it, if they can.

"Most of our business this year has been of the 'bread and butter' variety," Mr. Schurmann says. "We've stuck pretty close to straight commercial, with side trips into the water cooler and milk cooling fields as our only exceptions."

"Beer cooling? We've kept away from that. Credit conditions weren't too good—and it used to be the only kind of business this department got."

"Bread and butter" business notwithstanding, Caswell commercial salesmen have made money for themselves. Mr. Schurmann is proudest of the fact that every one of his 10 men has a good living under the new setup, and has from \$300 to \$500 in his reserve account.

"We have no sales turnover problem," he said, knocking wood. "We hunt around until we find the best type of man, and then we pay him enough to keep him with us. We know that if he doesn't make money, we don't either; and so we're all interested in seeing him make good."

What does the company require of salesmen?

"Only that they're able and willing to follow orders. The salesmen have a definite procedure to follow in their work—and there are no deviations. They work according to our rules, or they don't work for us, that's all."

"We won't break in more than one man at a time. A good salesman is worth all the time you can spend training him; we want good men—and so we can't afford to risk training a man hastily, and having him get away from us. We could use another half dozen men right now—but we'll probably be several months getting them."

Now, more about this sales procedure. How does it work? And how are the men supervised?

The answer is, they aren't—in Detroit. Every city commercial salesman is a sales supervisor. He regulates himself; subject, of course, to Mr. Schurmann's decision on matters of policy. The supervisors are paid an established commission on every job—and that's the whole sales expense, as far as Caswell is concerned.

If there are any other expenses, the salesman pays them himself. Did he get the tip from a user? Whether or not he pays a bonus is his affair. If he uses junior salesmen as "bird dogs"—and most city men do, Mr. Schurmann says—he pays the youth's salary out of his own pocket.

And if it's a close deal, and the salesman feels he can land the order by making a price cut, he is free to do so—but it's his loss, not the company's. Incidentally, Mr. Schurmann has found this an excellent bar to "price" selling. Salesmen know it's costing them to slice—and they battle to the last line before they'll "fudge" a nickel.

All of the supervisors are able to figure the refrigeration requirements of any standard commercial job. The department's engineer, in addition to figuring the tougher ones for him, checks all other estimates to be certain the job will do what it's supposed to do. In addition, engineering sales classes are held every Saturday morning.

Records are kept on every job, from its beginning in an estimate to its end in a finished installation. In making his survey each salesman is required to put down, on a printed form, the complete understanding between himself and the prospect.

This "mutual understanding" covers a statement of the prospect's refrigeration problems, installation conditions, a list of the equipment to be furnished by both parties, where the equipment is to be located, what is to be done with the old equipment, guarantee and service understanding, and when the job is to be completed.

Filled out in pencil by the salesman, the survey is turned in at the office, typed, and a copy sent to the prospect to show him the terms of the agreement. His O. K. is necessary before anything further can be done.

"As a result," says Mr. Schurmann, "we've eliminated one great big sore spot in our relations with prospects—misunderstandings. The agreement lists everything concerned with the job, from beginning to end. It tells the prospect what we will furnish, what he is to provide, where the job is located, and when it's to be in operation."

### Schedule of Service Charges (6% Basis) for Deferred Sales of Commercial Refrigerators

Unpaid Bal.	4	5	6	7	8	9	10	11	12	13	14
ance	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.
\$ 1	.02	.03	.03	.04	.04	.05	.05	.06	.06	.07	.07
\$ 2	.04	.05	.06	.07	.08	.09	.10	.11	.12	.13	.14
\$ 3	.06	.08	.09	.11	.12	.14	.15	.17	.18	.20	.21
\$ 4	.08	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28
\$ 5	.10	.13	.15	.18	.20	.23	.25	.28	.30	.33	.35
\$ 6	.12	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42
\$ 7	.14	.18	.21	.25	.28	.32	.35	.39	.42	.46	.49
\$ 8	.16	.20	.24	.28	.32	.36	.40	.44	.48	.52	.56
\$ 9	.18	.23	.27	.32	.36	.41	.45	.50	.54	.59	.63
\$ 10	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70
\$ 100	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
\$ 200	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00
\$ 300	6.00	7.50	9.00	10.50	12.00	13.50	15.00	16.50	18.00	19.50	21.00
\$ 400	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	26.00	28.00
\$ 500	10.00	12.50	15.00	17.50	20.00	22.50	25.00	27.50	30.00	32.50	35.00
\$ 600	12.00	15.00	18.00	21.00	24.00	27.00	30.00	33.00	36.00	39.00	42.00
\$ 700	14.00	17.50	21.00	24.50	28.00	31.50	35.00	38.50	42.00	45.50	49.00
\$ 800	16.00	20.00	24.00	28.00	32.00	36.00	40.00	44.00	48.00	52.00	56.00
\$ 900	18.00	22.50	27.00	31.50	36.00	40.50	45.00	49.50	54.00	58.50	63.00
\$ 1,000	20.00	25.00	30.00	35.00	40.00	45.00	50.00	55.00	60.00	65.00	70.00
\$2,000	40.00	50.00	60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
\$3,000	60.00	75.00	90.00	105.00	120.00	135.00	150.00	165.00	180.00	195.00	210.00
\$4,000	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00
\$5,000	100.00	125.00	150.00	175.00	200.00	225.00	250.00	275.00	300.00	325.00	350.00

Unpaid Bal.	15	16	17	18	19	20	21	22	23	24
ance	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.	Mos.
\$ 1	.08	.09	.09	.10	.10	.11	.11	.12	.12	.12
\$ 2	.15	.16	.17	.18	.19	.20	.21	.22	.23	.24
\$ 3	.23	.24	.26	.27	.29	.30	.32	.33	.35	.36
\$ 4	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48
\$ 5	.38	.40	.43	.45	.48	.50	.53	.55	.58	.60
\$ 6	.45	.48	.51	.54	.57	.60	.63	.66	.69	.72
\$ 7	.53	.56	.60	.63	.67	.70	.74	.77	.81	.84
\$ 8	.60	.64	.68	.72	.76	.80	.84	.88	.92	.96
\$ 9	.68	.72	.77	.81	.86	.90	.95	.99	1.04	1.08
\$ 10	.75	.80	.85	.90	.95	1.00	1.05	1.10	1.15	1.20
\$ 100	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00
\$ 200	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00
\$ 300	22.50	24.00	25.50	27.00	28.50	30.00	31.50	33.00	34.50	36.00
\$ 400	30.00	32.00	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
\$ 500	37.50	40.00	42.50	45.00	47.50	50.00	52.50	55.00	57.50	60.00
\$ 600	45.00	48.00	51.00	54.00	57.00	60.00	63.00	66.00	69.00	72.00
\$ 700	52.50	56.00	59.50	63.00	66.50	70.00	73.50	77.00	80.50	84.00
\$ 800	60.00	64.00	68.00	72.00	76.00	80.00	84.00	88.00	92.00	96.00
\$ 900	67.50	72.00	76.50	81.00	85.50	90.00	94.50	99.00	103.50	108.00
\$1,000	75.00	80.00	85.00	90.00	95.00	100.00	105.00	110.00	115.00	120.00
\$2,000	150.00	160.00	170.00	180.00	190.00	200.00	210.00	220.00	230.00	240.00
\$3,000	225.00	240.00	255.00	270.00	285.00	300.00	315.00	330.00	345.00	360.00
\$4,000	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00	460.00	480.00
\$5,000	375.00	400.00	425.00	450.00	475.00	500.00	525.00	550.00	575.00	600.00

**Computing the Service Charge**—Determine the amount to be financed (unpaid balance) by deducting from the selling price the cash down and on-arrival payments, and the trade-in or other allowance. Then compute the service charge for the credit period desired in accordance with the accompanying table. Next, determine the insurance charge, if applicable.

The service charge and insurance charge, if any, must then be added to the unpaid balance to determine the full amount of the customer's obligation. Divide the resulting total by the number of months for which the sale is being financed to obtain the amount of each instalment. Include odd cents in the final payment.

"There are no oral agreements, as far as we're concerned; we don't recognize them. That agreement sheet lists everything there is to the job. When the prospect approves it, it's a contract. Then it's up to both of us to do what we've promised."

Caswell's commercial set-up in the rural territory differs but slightly from that in metropolitan Detroit.

Three supervisors work the territory. Dealers need not have special training; the sum total of their knowledge need only be sufficient for them to be able to fill out a rapid commercial refrigeration survey.

This survey lists the name and location of the store, a statement of the equipment now in use, and an estimate of the equipment which the

store might profitably be able to use. Mailed to Caswell, the survey is turned over to the supervisor covering that district, and he makes the call on the prospect, taking the local dealer with him.

After that, the procedure is identical with that followed in Detroit.

Detailed installation instructions accompany every job that goes out in the field, and periodic check-ups make certain that it was put in properly. Service men are trained as rigidly as salesmen—and those who won't follow orders soon find themselves looking for other employment.

That's the way the department works, from top to bottom. A simple set of rules from which there is no variation.



**CALIBRATED RANGE..  
FIXED DIFFERENTIAL!  
9100 Regulators**

for ICE CREAM CABINET CONTROL

The 9100 Regulator with Calibrated Range makes an ideal Ice Cream Cabinet control where an accurate and selective temperature adjustment is required.

A visible range scale, calibrated from -6° to +10° F. in increments of 2°, allows an indicative field setting to be made at any control point within the range. The differential is fixed at 2° and the calibration refers to the closing of contacts. Adjustment is by means of a convenient outside knob.

This 9100 Regulator (see cut) is of the temperature type, but the same feature can be furnished, if specified, for pressure controls applied to methyl chloride machines.

All 9100 Regulators can be furnished with or without overload protection and with or without high pressure cut-out.

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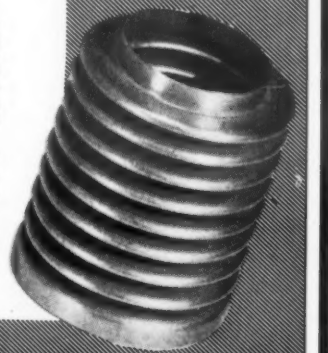
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Bridgeport is prepared to cooperate in the same manner with you. Write for Bulletin IR today. Bridgeport Thermostat Co., Inc., Bridgeport, Conn.



**BRIDGEPORT  
Knows  
BELLOWS**



## Utilities Capitalize on Double Profit Building Possibilities in Selling Refrigeration (Concluded)

This is the conclusion of the history of public utility merchandising in the refrigeration field which was begun in the Tenth Anniversary Issue of the News (Sept. 9).

Late in November, Thomas M. McCarter, president of the Edison Electric Institute, expressed the opinion that the TVA setup was unconstitutional, and hinted at a test case to be brought before the Supreme Court. Newton D. Baker and James M. Beck were retained to study the legality of legislation affecting the nation's electric industry.

Not long after, Georgia Power Co., through newspaper advertising, announced it was jumping the price of its interim model refrigerators from \$79.50 to \$99.50 effective Jan. 1 of this year. Tennessee Electric Power Co., in a letter to dealers about the same time, announced that, effective Jan. 15, it would discontinue sale of the 4-cu. ft. interim models at \$79.50.

### Institute Asks Test

Close of the year found the Edison Electric Institute, in a memorial sent to President Roosevelt, requesting that the government abandon its public ownership program and cooperate with the institute in a quick test of the constitutionality of the TVA. Thomas N. McCarter, president of the institute, gave it as his own opinion that the government had exceeded its authority in the program and was infringing on states' rights.

Citing the joint legal opinion of Newton D. Baker and James M. Beck, Mr. McCarter expressed his anxiety over the "grave crisis" which confronted the industry, pointed out that utilities companies represented a direct investment of more than 12 billions of dollars and indirectly many millions more, and ended with the questions:

"Tax free public utilities financed by the government at low rates could, it is contended, furnish current at lower rates. Suppose all this to be true. Is it fair? Is it in keeping with the declared policy of the national recovery act to prevent unfair competition? Is it in the spirit of American fair play?"

### Utilities Assume New Function

During 1935, the widespread retrenchment movement among utilities continued, but with interesting variations which effectively stilled the voices of central station merchandising opponents who were clamoring for a general exodus of utilities from the merchandising field.

Early in February, Niagara Hudson Power Co. instituted an "economy purchase plan" whereby it turned direct selling over to local dealers and at the same time offered credit companies office space, equipment, and the use of its credit checking system, together with a sales training course for dealers. In other words, the utility gave up active merchandising to act as an intermediary between the local dealers and the customer.

Several other central station companies left selling to offer their display space as a sort of central showroom for their local dealers, and aided them by compiling prospect lists and referring customers to the dealer handling the particular model and make in which they were interested. The Birmingham Electric Co. was prominent in this movement.

The federal government's TVA program suffered a setback in early spring when Judge W. I. Grubb, in Birmingham, Ala., district court ruled

invalid all contracts for interchange of power between the government authority and the Alabama Power Co., and forbade TVA to sell surplus power to outside companies.

Chest models had cluttered up utilities' warehouses ever since they were introduced. To promote load building along rural power lines and utilize dead stocks of the "baby" models, several companies started rent-as-you-buy plans. Georgia Power rented the small boxes to customers using less than an average of 35 kwh. per month for small monthly payments, the boxes to become the customer's property at the end of five years. Virginia Power used a strict rental policy.

Other central station companies using similar plans were the United Illuminating Co., New Haven, Conn.; Carolina Power and Light Co., Pacific Gas and Electric, and numerous others.

### Meter Plan Still Used

The old "meter" system was far from dead during the year, with Frigidaire, Kelvinator, and Leonard pushing the "drop-a-coin-in-the-slot" time payment plan. Some dealers and salesmen looked askance at the idea, but many utilities found it a potent selling factor when backed by their strong collection agencies.

New York Edison, out of the merchandising field since the summer of 1933, joined the cooperative utility-dealer group in June. The company worked out a plan to take orders and supply leads for metropolitan dealers, but refused to accept any part of the purchase price of machines or to function as a credit medium.

A utility sales survey for the first six months of the year showed central stations' business up 30% over a similar period of 1934, with the sale of 89,712 units by 100 representative companies, but with the nation's utilities doing only 20% of the total.

Nema and the Edison Electrical Institute joined forces in forming the National Kitchen Modernizing Bureau to promote appliance and electric refrigerator sales through traveling all-electric kitchens. P. B. Zimmerman, manager of the General Electric appliance division, urged utilities to display and advertise all-electric kitchens through cooperative campaigns as the best method of boosting unit sales in all lines.

In June, six central stations affiliated with New York's Consolidated Gas group proposed a \$7,500,000 reduction in current rates throughout the metropolitan New York area on customer bills over \$1.30 per month, and the utility started a system of mass reductions.

### Rate Reductions Needed

Most utilities recognized the fact that rate reductions should come within the next few years if the program of load building was to progress.

A federal survey showed a wide disparity in rates throughout the country. In covering 1,825 private central stations and 1,969 municipal systems, it was found that 100 kwh. cost \$7 in Jacksonville, Fla., and \$2.40 in Tacoma, Wash. Equally wide margins of difference were brought to light in other cities.

Utah Power and Light Co. slashed its rates one-half on current used over the customer's normal power bill.

In August, EH&FA became a national agency for financing sales of electrical appliances with RFC capital. Credits up to seven years were offered on heavy farm equipment. Most util-

ities looked to their traveling display kitchens, covering rural areas, to bring back increased business, and they were not disappointed. The all-kitchen, housed in a trailer in most cases, cut showroom overhead, and took the idea to the home in a forceful demonstration of companion merchandising.

### EH&FA Financing Protested

The idea, however, brought a not-unexpected howl from dealers. In Wisconsin, the Radio, Refrigeration, and Appliance Association protested to utilities that their home demonstration exhibits were ruining trade in cabinet models in the areas around Milwaukee by showing chest models at low cost.

Air conditioning, which had been getting a small play from central stations ever since its inception, began to boom in 1935.

Detroit Edison and Commonwealth Edison of Chicago set up completely air conditioned homes, which attracted prospects and reflected possibilities of the field in increased sales.

The Chicago central station reported doubled installations, and Public Service of New Jersey noted a 60% gain over 1934 by installing 123 systems in a five-month period.

As the year closed, nation-wide surveys demonstrated conclusively that, far from being out of the refrigeration merchandising picture, public utilities were getting back into it, mainly through the vast prospective market for air conditioning installations. Improved purchasing power was reflected by a trend toward the buying of larger cabinet sizes, and the all-electric kitchen idea paid its way through improving sales of companion appliances.

Although reliable statistics for this year have not as yet been compiled, it is safe to say that public utilities in the field should show substantial business gains in electrical refrigeration sales. The demise of the NRA

in the past year worked no appreciable hardship on the central station industry, and 1936 has proved eminently successful.

Kitchen Modernizing Bureau programs are now operating in 38 states, and despite a minor undercurrent of opposition from small dealers whose business does not justify elaborate displays, the all-electric kitchen era may be said to be definitely here.

When FHA financing of electrical appliances died in the early part of the year, some utilities executives became apprehensive about the future of their credit business, but withdrawal of the government from credit operations has ceased to be a major worry. Expanded credit lines in other directions have taken up the slack.

After the Detroit controversy over FHA financing, during which it was shown that high-pressure salesmen were telling gullible customers that the President would cancel all debts incurred under the FHA plan, most utilities men were satisfied to depend on the acumen of their own credit organizations to weed out dependable accounts from the "dead beats."

### Refrigerators Best Load Builders

A report at a spring meeting of utilities executives in Cleveland showed that electric refrigerators were the best load builders in the field, having contributed \$105,600,000 to power revenues during 1934, which was 35% of the total.

The TVA controversy, now that it has been shown that the government's threats of entering the appliance merchandising business were empty, has died down, although utilities are firm in their belief that government penetration into the merchandising and power fields is outweighing its more or less debatable benefits by scarring the independent power trade.

Southern California Edison reported an almost 100% sales gain during the past year by selling 35,523 units.

George E. Whitwell, addressing the Edison Electrical Institute this spring, said that the utilities' best defense against attack was to sell more kwh. hours with reduced power rates. Executives at the meeting were enthusiastic concerning the future of air conditioning and its various applications.

An interesting development in central station participation in the pioneering of the new field was shown in permission granted by leading air conditioning manufacturers to the San Joaquin Light and Power Co., of California, to inspect and grant final approval to all installations made in its territory. This is seen as a significant move to protect the air-conditioning market.

### Air Conditioning Next

While all parties concur in the opinion that air conditioning is the future companion line to push with electric refrigeration, discussion between the high and low-price unit backers is rampant.

George Green, sales engineer of the Union Electric Light and Power Co. of St. Louis, believes that air conditioning will not boom until manufacturers introduce room cooling units in the \$100 class. Others foresee price wars from the experience of the electric refrigeration industry, and call upon the industry to maintain the highest quality standard possible to avoid the pitfalls of shoddy, undependable air conditioning units and installations and their consequent effect on a buying public already sold on the idea itself, but still wary of its "perfection."

Proponents of the higher-priced home installations point out that, unlike electric refrigerators, "it's hell putting 'em in and it's more hell taking 'em out." The analogy is indubitable, for if air conditioning is to succeed public utilities must know their business when they put a system in a home, office, or a single room.

## BUSH ANNOUNCES



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APPEAL EQUALLY TO THE CUSTOMER, THE REFRIGERA-  
TION ENGINEER AND THE COMMERCIAL SALESMAN.



THE CUSTOMER WILL BE IMPRESSED BY ITS STURDY APPEAR-  
ANCE AND ITS HANDSOME FINISH OF POLISHED ALUMINUM.

THE REFRIGERATION ENGINEER WILL RECOGNIZE THE FUN-  
DAMENTAL ADVANTAGES OF INSULATED DRIP PANS.

THE COMMERCIAL SALESMAN WILL FIND THIS COIL AN  
AID IN GETTING NEW BUSINESS AND AN IDEAL UNIT TO  
OFFER IN MODERNIZING OLD INSTALLATIONS.

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Hundreds of thousands of refrigerators were sold five years ago. Now they need new door gaskets.

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## AIR CONDITIONING AND REFRIGERATION NEWS

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## Increased Earnings for Commercial Refrigeration Men

CHEERING TO refrigeration manufacturers and distributors alike is the rebound which sales of commercial types of equipment have taken this year. For altogether too long this important branch of the industry has been in the doldrums. Commercial refrigeration has generally been a profitable business, and practically everybody in the industry felt the rub which followed the downhill run of the commercial refrigeration sales curve. Contrary to the experience of household refrigeration, which defied and even reversed the general business trend, commercial refrigeration sales appeared to be entirely sympathetic with and responsive to the fluctuations of the depression.

Everything from near saturation of the market to poor judgment on time payment credit risks has been blamed for the drop in commercial refrigeration sales volume. Undoubtedly a number of different factors have entered into the situation, but one of the most important, one which has a definite bearing on the future of commercial refrigeration, is seldom mentioned. That is the problem of salesman's income. This problem, in turn, is intertwined with that of duplicate selling activity on machine and case.

In the "good old days," when commercial refrigeration sales were booming, the machine salesman and the case salesman worked together on a job. The case salesman, who had been on the job in the territory a long time, frequently turned up the prospect and did the preliminary "spade work." The machine salesman, for his part, did the estimating, and "put on the heat" to close the sale. A 10-foot case, let us say, was sold for \$850. To this was fitted a one-half horsepower compressor and coils, at a price of \$500. The case salesman took a 15% commission, the machine salesman 12%. Both were satisfied.

And then the case manufacturers began to improve their products. They were designed better, insulated better, and used smaller compressors. Coils were built into the case. Prices were raised, and so were commissions. So the case salesman was putting in a thousand-dollar job, and collecting 20% commission; while the machine salesman was selling a one-third horsepower compressor without coils, instead of a one-half

horsepower compressor with coils (and still collecting but 12% commission!).

It didn't take very much of that before commercial refrigeration machine salesmen were out looking for new jobs. And the commercial refrigeration sales volume dropped precipitously.

This widespread desertion of salesmen, coupled with a second factor, left commercial refrigeration sales organizations in pretty much of a hole. The second factor was that of an avalanche of repossessions. Five or six years ago a heavy campaign was staged to get grocery stores to put in meat departments. They were sold on the idea that they could make big profits, could keep waning volume up to par, by installing refrigerated display cases and selling meat. That individual stores could do this was proved in many places; but the market was far oversold, particularly during a time of depression.

Most of these jobs had been sold on long terms, and when the promised profits were not immediately forthcoming, there was a wave of repossessions. That was the last straw. Firm after firm closed up its commercial refrigeration department.

Commercial refrigeration business was still to be had, of course, and so an altogether new group began taking it up. Sales outlets for cases acquired the franchise for such machines as Universal Cooler, Brunner, Copeland, and Curtis. One salesman sold a complete job, and made himself some money on the transaction. Customers, it was found, much preferred to deal with one man.

Seeing the trend, the "old-timers" in the refrigeration merchandising community have begun to get back into the commercial game again. But nowadays a commercial machine dealer is likely to sell cases, too. He looks up some of the good salesmen he lost, offers them attractive commissions, and makes it possible for them to obtain a high unit of sale with a complete installation. And so the good men have been coming back to commercial refrigeration selling.

Several new manufacturers of cases have sprung up to share in this business. For the most part, they are not cutting into the volume of the older case manufacturers, but are taking over that portion of the total volume which formerly went to local carpenter shops. The lower temperatures demanded by mechanical refrigeration installations have driven the cabinet makers almost out of the picture. Porcelain-finished, all-steel cases of original and attractive designs are coming to the forefront.

Commercial refrigeration is still a stronghold of specialty salesmanship. A butcher or a florist doesn't walk into a department store and order refrigeration "over the counter." And specialty salesmanship, of course, must have a backbone of good salesmen in order to insure success. Innately, good salesmen have but a thin streak of loyalty. They won't stick to a product or an organization unless they can make satisfactory incomes. So, for a commercial refrigeration business to be successful, it seems essential that the dealer be able to offer sufficient inducements to salesmen to attract the good ones.

This season a great proportion of commercial dealers have taken on agencies for both machines and cases. Thus they give their salesmen "something to chew on," and a chance for a slice of a large unit-of-sale figure. That the policy is proving successful seems to be indicated in the rising curve of commercial refrigeration on the sales graph.

## Letters

### A Message from the Chairman of Nema

Merchant & Evans Co.  
Manufacturers, Importers, Smelters, Jobbers  
2035 Washington Ave.  
Philadelphia, Pa.  
Sept. 17, 1936.

Publisher:

I have read with the greatest interest the remarkable history of the electric refrigeration industry contained in your splendid Tenth Anniversary Edition of ELECTRIC REFRIGERATION NEWS. As I have taken occasion previously to say to you privately, I have the highest appreciation of the splendid trade journal for the industry that you founded and have built up into an institution. I value the News as a medium for the exchange and dissemination of trade information; I value it as an efficacious advertising medium; and I value it further for its fearless and upright editorial and news policies. Your views of the trends and the future of the industry in the past 10 years have been clearly expressed, and in general were remarkably envisioned and true in perspective.

The electric refrigeration industry has contributed tremendously to the growth and prosperity of the utilities and other industries supplying it with materials and devices, but while the industry has made a notable place for itself in American industry and in the creation of new national wealth, its greatest service has been in its contribution to the increase in the level of living in America and to the betterment of national health and comfort. The American people are paying for refrigeration, in its many avenues of application, not less than three hundred million dollars a year. This makes the industry a major one and of interest and close to the lives of every family, and the nation has never spent so much of its income to better purpose.

The industry as a whole has not prospered as many others have with similar activity. While its growth has been steady and phenomenal, the profit return evidences the fact that it has been prodigal in its expenditures in experiment, in refinement, and in development and pioneering further uses and applications all having to do with the health and living conditions of the people at large. A further element in this connection is the amazing picture of reductions in cost and in price that has taken place. These 10 years of growth have seen the reduction in the average household refrigerator in price to the consumer from around \$400 to \$100, each reduction bringing a greater cross-section of buyers in line, and thus making a refrigerator which has come to be a household necessity, an acquisition that every owner may have. The industry would be sounder and a fairer field of occupation for its thousands of workers if its profits had been fairer and its rewards greater.

So much for what has been done; but what of the future? The past, as I see it, is but a taste of what can be enjoyed from the future development of refrigeration. I can envision the day of complete scientific food protection and preservation through the more extensive and technically correct use of electric refrigeration. In my mind's eye, I can see every public gathering place, every work shop, every railroad passenger coach, every bus, every office, and every home made comfortable by the conquest of weather and climate by scientific air conditioning in winter and summer with a resulting higher level of health in this country.

With this history and prospect we have an industry that has a responsibility to the people of this country. We have a constructive enterprise with an unlimited field of useful activity which should afford a fine reward for all those engaged in it. Our task now is to steer the industry through its problems and difficulties and keep it headed right. We want to constantly better our standards, to constantly improve the product, to constantly reduce costs, and extend its use. We want to prepare for the replacement market which is going to ultimately be the real market for the electric refrigerator itself. We want to regulate and stabilize the warranties issued to protect the buyer on one hand, but the distributor on the other hand, from undue and onerous burdens. We want to extend commercial refrigeration and air conditioning, but at the same time to reduce the cost to a place which will make such facilities more available. Finally, we must strive to keep a high standard of ethics in this manufacturing and merchandising field.

I have attempted to give you my own personal interpretation of the history of this business and my own vision of the future. You may differ

from me in detail, but I am sure that we have essentially the same view, and so, while my own service as Chairman of the electric refrigeration industry will be over before very long, the News will go on with the industry and can and I hope will be an abiding and good influence in the industry as it goes on to bigger things.

Therefore, wishing you and your paper all prosperity and success, please believe me, very sincerely yours.

THOMAS EVANS.

P. S.—By the way, will you please send me ten (10) copies of this Anniversary Number and bill the same to this firm? Perhaps you or Mr. Taubeneck will be in Cincinnati on the 5th of October at the Nema meeting. We meet on the 5th and 6th.

### Flowers for the Living

R. L. Polk & Co.  
Detroit, Mich.

Sept. 18, 1936

Editor:

My sincere compliments to you on a masterly study of the refrigeration industry in your paper that was presented before the World Refrigeration Congress.

I am enclosing cash, for which I wish you would send me three copies of this 10th Anniversary number containing this paper.

The clear facts, straightforward summarization of the refrigeration picture is not only interesting, but should be instructive to many other lines of business.

Being a sincere believer in "flowers for the living" I take pleasure in handing you these orchids.

F. J. MCGINNIS,  
Direct Mail Division

P. S. As one Leica "candid" camera user to another, what has happened to the series of candid camera shots you were previously running? I thought them good and worthy of being continued.

### Unfair to Porcelain?

Porcelain Enamel Institute, Inc.  
612 N. Michigan Ave.  
Chicago, Ill.

Sept. 19, 1936

Mr. Taubeneck:

I have read your story "Development of the American Household Electric Refrigeration Industry" in the September 9th issue of ELECTRIC REFRIGERATION NEWS. There are a number of points in the part of the story which carries the sub-head "Improved Cabinet Finishes" which I believe are entirely unfair to porcelain enamel.

In the first place, the porcelain enameling industry has not been sitting around and trying to rest on its laurels. Enamels are constantly being improved, and I think I am correct in saying that there has been as much improvement in porcelain enamels during the past few years as there has been in lacquers or other organic finishes.

The point concerning porcelain enamels being more expensive on a refrigerator than lacquer is not founded on facts. There is very little difference in the cost of producing a modern porcelain enameled refrigerator exterior as against a lacquer exterior. As you say in your article, porcelain enamel is generally used as an exterior finish on the "deluxe" lines where there are also other additional refinements and quite often additional equipment not supplied on the cheaper lines furnished in other finishes. Is it not the addition of other refinements and equipment that accounts for the major portion of the difference in price, rather than the difference in the cost of the finish?

In referring to porcelain enamel, you say "being impervious to almost every kind of abuse except chipping, porcelain enamel has set the pace for lacquer manufacturers." Of course porcelain enamel will chip or break if you hit it with a hammer or subject it to unreasonable abuse. Likewise, organic finishes are subject to flaking, discoloration, peeling, and disintegration under similar unfair treatment. The fact is, however, that porcelain enamel is much less susceptible to damage in use than any other present day finish.

Another point that I very much disagree with is your statement that "lacquer has an inherent advantage, of course, in workability and patchability (panels don't have to be junked if they are marred along the production line), and a wide range of color possibilities." The facts are that porcelain enamel is just as workable as the organic finishes which are ordinarily used now on refrigerator exteriors, and any damage to porcelain enamel while on the production line can be repaired just the same as can lacquer. What is more important is the fact that porcelain enamel is far less susceptible to damage on production lines.

As for color, you leave the impression with the reader, through referring to the wide color possibilities in lacquers, that porcelain enamel is restricted in this connection. It should be common knowledge that porcelain enamel is available in practically any

color or shade of color that might be desired, while it is my impression that some of the newer organic refrigerator finishes do not present these color possibilities.

You speak of the advantage of "high" temperatures now recommended for some organic finishes, but I notice that you give 260° as the temperature used for the finishing coat, which after all is the only coat in which the product manufacturer or user is interested insofar as resistance to damage in the final finish is concerned. To those of us who are accustomed to speaking in terms of 1400 to 1600 F., 260° seems little more than an accelerated drying temperature and we see no reason why this offers an opening for comparing the hardness with porcelain enamel.

It is not my intention to discourage reference to any type of refrigerator finish in your columns, for undoubtedly there is much constructive information that can be published on both types of material, but it does seem unfair to publish an article comparing both types of finishes and then devote all except a few lines in the article to a recitation of the advantages of one of the types of finishes being discussed.

GEORGE P. MACKNIGHT,  
Secretary.

### TVA Has Put Local Dealers Out of Business

Gambill Distributing Co.  
117-119 Ninth Ave., North  
Nashville, Tenn.

Sept. 14, 1936

Editor:

May I congratulate you on your editorial of Sept. 2 entitled "Maybe There's Hope For The T.V.A."

The writer of this editorial certainly appreciated the problem insofar as the independent appliance dealer is concerned.

The merchandising activities of the Tennessee Electric Power Co. (Commonwealth & Southern) have included the sale of a Table Top Range (Hot-point) at \$59.25, a "full-family" size refrigerator (Frigidaire) at \$99.50 and a water heater at a price which manufacturers tell us leaves no profit for them.

The range and the refrigerator have been, we are informed, especially built for them and the difference between the price at which they are bought and the price at which they are sold is not sufficient to cover a legitimate independent merchandising operation, even tho' the dealer were able to purchase these items from the manufacturer at the same price the power company pays—and the distributor were eliminated entirely.

The result has been just what you say—a number of dealers either quit entirely or lost all interest insofar as active merchandising of electric appliances is concerned.

Since only one manufacturer in each line can secure distribution through the power company—it seems strange that the independent manufacturers who must look to dealers and distributors for their business have not been more interested in this situation so sure to spread further with the present antagonism between Government and Private Utilities.

We hope to see you follow this situation in future issues of your good publication.

WHEELS GAMBILL, JR.

### Let Us Know Who Gets the New Hat

Malone & Moles  
Wholesale Distributors—Carrier  
Refrigeration and Air Conditioning  
606 Pierce St., Sioux City, Iowa  
Sept. 17, 1936.

Gentlemen:

We note on page 24 of the Sept. 9 issue that one of our fellow distributors has taken exception to the article on the front page of Aug. 26 issue in which you quoted from our letter of Aug. 18.

If you will again refer to our letter of Aug. 18, you will note that we referred to air-conditioning installations in the Sioux City Trade Territory, whereas your article, we believe would convey the impression that this reference was made to Sioux City proper.

In view of the additional information furnished in the letter published in the Sept. 9 issue, we now see that our figure of 80,000 for the trade territory is not as high as it should have been reported.

Much of our activity is outside of Sioux City proper and we are quite certain that a close check-up on the territory rather than the city alone, will give our company first honors for 1936. As a matter of fact, the writer is offering to "bet a new hat" that such is the case.

E. B. MOLES.

### Thank You

Armstrong Cork Co.  
Lancaster, Pa.  
Aug. 27, 1936

Editor:

I have enjoyed George Taubeneck's reports of his world trip very much.

GRAY PLATYR, Adv. Dept.



## Trophies for Kelvinator Trip-Winners



Kelvinator executives inspect the collection of cups and prizes to be awarded to salesmen making the 10-day cruise to Havana as winners in the company's "Keep the Ball Rolling" contest. Seated, left to right, are: Sam C. Mitchell, director of advertising and sales promotion; J. A. Harlan, commercial sales manager; and H. W. Burritt, vice president in charge of sales. Standing are: P. L. Miles, manager of the range and heater division; M. S. Bandoli, manager of domestic sales; and V. J. McIntyre, manager of the washing machine and ironer division.

## Price Cutting, Excessive Trade-in Allowances Must be Curbed, Says Frigidaire Sales Star Roberts

**Editor's Note:** Leo Roberts, youngest member of the Frigidaire B.T.U. club and salesmanager of European Radio Co., Inc. Brooklyn Frigidaire outlet, is known to readers of AIR CONDITIONING AND REFRIGERATION NEWS through his article on price slashing tactics which appeared in the Aug. 5, 1936 issue of the NEWS. In the interview with NEWS Reporter R. H. Potter which follows, Mr. Roberts' analysis of the metropolitan refrigeration setup interprets present conditions with a view toward world markets to come.

By R. H. Potter

BROOKLYN—Long warranties and their service impositions on the small dealer so far haven't had a chance to become a major issue in the nation's most concentrated refrigeration market, New York City, stated Leo Roberts, salesmanager of European Radio Co., Inc., 282 Livingston St., Brooklyn, in a recent interview.

"I've been reading the NEWS' accounts of what the Cleveland dealers have been doing about it. That's the way to do it. If we're going to get cooperation from the manufacturers it's up to us to take the initiative.

"We've had rumbles against these exorbitant service demands from dealers here in New York," Mr. Roberts pursued, "but at least you don't have to worry about that side of it until you've sold the box. The job here is to be able to sell one. Every reliable dealer in Brooklyn is faced by the wholesale tendency of his competitors to undersell standard makes by 20%. Price is the factor that sells refrigeration here, and the way dealers have learned to cut price is like nothing else anywhere.

"That may sound like exaggerating," he emphasized, "but actual figures prove it. The five-mile arc that would take in Brooklyn covers the most concentrated population area in the world," Mr. Roberts rummaged in his desk for a moment and pulled out a sheaf of small maps.

"Here's a recent survey made by the *New York Daily News*. They've cut the borough up into 28 pieces; and any one of these sections has a population greater than most of the capital cities of the 48 states! Is it any wonder you can have five dealers mushroom up in a four-block square and each one manage to scrape out a living?"

The big department stores don't even come into the picture, the salesmanager went on to explain. In the first place, they have an established selling price they can't go below. They have to depend on the merit of the box and the service guarantee that goes with it to pull people into the store.

In the second place, they can't take trade-ins, and so work a big discount by allowing more than the old box is really worth.

"They draw the Manhattan trade and a lot of out-of-town business, but they don't touch Brooklyn. It's incomes of \$1,000-\$2,000 that we're coming in contact with more and more as refrigeration prospects, and as you can see"—he indicated the charts on his desk—"that's the group in which the big majority of the population falls."

Outside New York, Mr. Roberts

amended, the situation is not so much different as it is *less intense*. Dealerships are zoned off. Within the metropolis, manufacturers maintain, franchises can be awarded indiscriminately because the market is still unlimited.

"And the market is unlimited," he agreed. "The lack of territory protection isn't any problem at all in itself—it's the lack of price variation protection, that will allow a \$30 difference between identical boxes in two stores on the same block. Not a competitive brand," he stressed, "but the same identical box—the hardest competition in the world to beat.

"I've heard the theory advanced that price cutting really speeds up the turnover; in the long run it does just the opposite—it paralyzes business.

"I had a new salesman start in a short time ago," the dealer illustrated, "who finally sold the idea of refrigeration to four different prospects. It took him three weeks to work up those sales—he earned them. He went back, and in every one of the four cases found a new refrigerator that they had bought for substantially less from a cut rate outlet. It took away all this man's enthusiasm for selling refrigerators. He quit to look for a 'cleaner job.' Frigidaire lost a good salesman and the business that he would have built up.

"As far as that goes, you can't blame the customer either. He's getting a brand new box, same make, same 5-year warranty, for less money. He's not being gypped; he's getting a bargain that the list price dealer legitimately can't fight. *He's licked.*"

The newest guise of price cutting, the manager explained, is growing up with the increasing turn-in of old models. There's no standard price scale on these old boxes, and a dealer can sell the new one at list price but offer an inflated allowance figure.

A refrigeration "blue book," thinks Mr. Roberts, similar to the automobile standard, would cut down that kind of price cutting, and would make it a lot easier for all dealers in general. He gave an example:

"A woman came in a while ago to buy a new refrigerator, and said that she had a Frigidaire to trade in. It had cost her \$243 when it was new—that was seven years ago. I knew it was worth about \$5 now, after junking it. But she brought in that '\$243' so impressively, I could see she put a lot of store by it. She figured that the box still ran, and that she had paid plenty for it—it must still be worth quite a bit.

"But she didn't figure on the seven models that had come out in the meantime, and that it took less than seven to make her out-of-date box worth just exactly nothing in the second hand market. As I say, she couldn't realize that. So I told her we could allow her \$10 on the trade-in. She stopped short and her face went white—absolutely white.

"Do you think I'm a fool?" she said to me, and walked out of the store. She'll never come back to us to buy anything."

The turn-in of old machines is rising steadily, Mr. Roberts reported.

"They're utterly obsolete. They have to be scrapped. But they serve a good purpose for the price cutter. A minis-

ter we contacted recently who had an old model of our line was able to get \$47 up the street; we couldn't offer him ten. And yet it should be worth \$10 to the manufacturer to replace one of our own boxes with a new one. But they haven't backed us up yet on that. If we allow \$10, it's our loss."

The salesmanager recalled how, sometime ago, Frigidaire had made a special offer of \$150 to owners of old boxes toward the purchase of a certain recent model in which they happened to be overstocked.

"They went like hot cakes," the salesmanager related. "And it was worth it to us. Old boxes demand excessive service and lower the standard of good performance. Manufacturers should do that sort of thing consistently. When they're building toward a world market it's going to be worth it in the long run to keep only the newest and best models out under their name."

The refrigeration market is still "unfinished business," Mr. Roberts observed. But in a few years the unexploited domestic areas and foreign fields will be saturated. In a few years, he prophesied, used models will be pouring in a steady unflinching return of business.

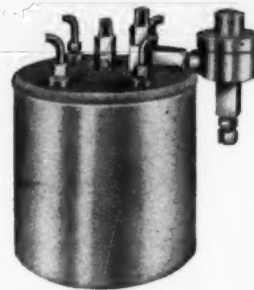
In preparation for these conditions, long-term guarantees and uncontrolled selling must be done away with, he stated, if the independent dealer is to survive.

"Do away with price cutting by making the price cutter pay for every violation. Give him a fair chance and a bounded territory where he can build with confidence and enthusiasm. And take old models off his hands and scrap them, leaving a place where new refrigerators can go in.

"I believe these things must be done," he said earnestly, "and with cutthroat competition existing as it does, they've got to be done soon."

## STABILIZE YOUR BUSINESS WITH TEMPRITE

Naturally, some divisions of general refrigeration business are more or less seasonal and slow down at the present time.



As a result, distributors are looking round for a refrigeration product which will enable them to hold on to their sales organization and at the same time reap adequate financial benefit.

Such a product is Temprite Beer Cooler which sells steadily throughout every month of the year and which has well-known exclusive advantages over any kind of competition.



We invite correspondence from interested distributors and wish to remind them that "there is no substitute for a Temprite."

**TEMPRITE PRODUCTS CORPORATION**  
1349 EAST MILWAUKEE AVE. - DETROIT, MICHIGAN  
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

## WHY G-E MOTORS HELP YOU SELL REFRIGERATORS



In a recent impartial survey, electric-appliance dealers and department stores were asked:

"Do you believe that it would be more difficult to sell appliances equipped with a little-known make of motor?"

"Yes," said 74 per cent.

"No," said 26 per cent.

"What makes—or brands—of electric motors, in your opinion, would make it easier for you to sell appliances?"

"General Electric," said 84 per cent.

TODAY, Mrs. America is purchasing high-quality merchandise. She is judging the quality of a refrigerator not only by the reputation of the refrigerator as a unit but also by the reputation of its various parts. A well-known name on the motor gives the refrigerator you sell additional acceptance and makes selling that much easier.

G-E motors are well and widely known because General Electric has been making dependable motors for electric refrigerators as long as motors have been used for that purpose. The G-E monogram means high quality to buyers everywhere. That's why G-E motors WILL HELP YOU SELL—why they will lessen sales resistance and lower your cost of selling.

Can you afford not to avail yourself of this added sales appeal?

General Electric, Dept. 6A-201, Schenectady, N. Y.

**GENERAL ELECTRIC**

070-132



# Air Conditioning

## Where Air Conditioning Has Been Installed On Lines of Tennessee Electric Power Co.

Name and City	Equipment and Installed by	Tonnage	Hp.
<b>Beauty Parlors</b>			
<b>During 1935</b>			
Mildred's, Nashville	Frigidaire	3	1½
Hillsboro Beauty Parlor	Carrier	5	5½
<b>1936</b>			
Vogue Beauty Shop, Columbia	Frigidaire	3	3¼
<b>Broadcasting Studios</b>			
<b>1936</b>			
WSM, Nashville	Carrier	9	15
<b>Cafes &amp; Restaurants</b>			
<b>Prior to 1935</b>			
Creightons', Chattanooga	Frigidaire	10	10½
B & W, Nashville	Carrier	..	50
My Sandwich Shop, Nashville	Frigidaire	3	3¼
Hermitage Hotel, Nashville	Frigidaire	20	21½
Andrew Jackson, Nashville	York	..	10
Star Cafe, Nashville	General Electric	..	10
<b>During 1935</b>			
S & W, Chattanooga	Carrier	35	37½
Frank Rambo, Nashville	Frigidaire	..	½
Kleeman's, Nashville	Frigidaire	15	17
Noel Hotel, Nashville	General Electric	20	24
By Path Cafe, Columbia	Frigidaire	3	4½
<b>1936</b>			
Eat-a-Bite, Nashville	Servel	9	10
T & K Sandwich Shop, Nashville	Frigidaire	9	10
Zaninis, Nashville	Servel	7	7½
Satsuma Tea Room, Nashville	York	9	1½
Read House, Chattanooga	Frigidaire	26½	28½
Hotel Patten, Chattanooga	Frigidaire	11	14
<b>Club Rooms</b>			
<b>During 1935</b>			
Mountain City Club, Chattanooga	Frigidaire	25	28
<b>1936</b>			
Elk's Club, Nashville	Frigidaire	10	10
<b>Drug Companies</b>			
<b>1936</b>			
Walgreen Drug Store, Nashville	Carrier	13	19½
Liggett Drug Store, Nashville	Carrier	14	18
<b>Hospitals</b>			
<b>During 1935</b>			
Children's Hospital, Chattanooga	Frigidaire	..	1.05
Tennessee Children's Home, Nashville	Carrier	5	5½
<b>1936</b>			
Cleveland Hospital, Cleveland	Frigidaire	17½	3
<b>Candy Companies</b>			
<b>Prior to 1935</b>			
Brook Candy Co., Chattanooga	Frick	..	25
Bennett Hubbard Co., Chattanooga	Frick	..	25
Mitchell Co., Nashville	York	..	5
<b>During 1935</b>			
Candyland, Nashville	York	6	16

Name and City	Equipment and Installed by	Tonnage	Hp.
<b>Industrial Applications</b>			
<b>Prior to 1935</b>			
Signal Mtn. Port. Cement Co., Chattanooga	Frigidaire	1	1½
Armstrong Candy Co., Martel, Tenn.	Frigidaire	3	3¼
<b>Clothing and Department Stores</b>			
<b>Prior to 1935</b>			
The Vogue, Chattanooga	York	..	112
Buford Bros., Nashville	Carrier	..	6½
<b>During 1935</b>			
Hollywood Shop, Chattanooga	Carrier	..	9½
Pettway-Reavis, Nashville	Frigidaire	6	6.1
Kiddie Shop, Nashville	Carrier	3	3½
Graysons', Nashville	Universal	10	12
Tinsley's, Nashville	Frigidaire	20	24
Feldman's, Nashville	York	10	25
Levy & Sons, Nashville	York	10	12
Armstrong's, Nashville	Frick	25	32
Lebeck's Dept. Store, Nashville	York	16½	26½
<b>1936</b>			
Klein's Dept. Store, Nashville	York	13	15
Davis Dept. Store, Nashville	Servel	17	21½
Rich Schwartz & Joseph, Nashville	York	36	50
Thom McAn, Nashville	Carrier	4	5½
Feld's, Nashville	Servel	9	12
McClellan's, Nashville	Carbondale	42	58½
Pickett's, Inc., Chattanooga	Frigidaire	25	26½
<b>Miscellaneous Stores</b>			
<b>1935</b>			
Phillips & Buttoff Hdwe. Store, Nashville	Westinghouse	11	12½
H. G. Hill Co., (Groceries), Nashville	Carrier	9	10
Chayburks (Furs), Nashville	Frigidaire	3	3½
Berland Shoe Co., Nashville	Servel	5	8
Florsheim (Shoes), Nashville	Carrier	3	3
F. W. Woolworth (sales floor), Nashville	..	..	95
<b>1936</b>			
Kress Co., Nashville	Carrier	120	156½
Candy's, Inc., Nashville	Frigidaire	3	10
Chandler Shoe Co., Nashville	Carrier	7	8½
Kay Jewelry, Nashville	Carrier	5	5½
Bakers Shoe Store, Chattanooga	York	7½	10
Tenn. Elec. Power Co. (sales floor), Chattanooga	Frigidaire	54	62½
<b>Theaters</b>			
<b>Prior to 1935</b>			
Tivoli, Chattanooga	Carrier	..	275
Lowes Theater, Nashville	York	..	265
Paramount Theater, Nashville	Brunswick	..	205
<b>During 1935</b>			
Woodland Theater, Nashville	Frick	52	80
Crescent Amusement Co., Nashville	Frigidaire	20	28
<b>1936</b>			
Knickerbocker Theater, Nashville	Carrier	68	72½
Crescent Amusement, Nashville	York	40	51
<b>Buildings</b>			
<b>1935</b>			
McMorrough Apts., Nashville	Westinghouse	20	27
<b>1936</b>			
Sears & Roebuck Bldg., Nashville	York	100	..
<b>Miscellaneous</b>			
<b>Prior to 1935</b>			
E.H.F.A. Showroom, Chattanooga	Westinghouse	24	30
McEwen Laundry, Nashville	Frigidaire	1	1
McEwen Laundry, Nashville	Frigidaire	1	1
<b>During 1935</b>			
Tenn. Dept. of Health (Vault), Nashville	Frigidaire	¾	¾
Tenn. Dept. of Health (Library), Nashville	Frigidaire	¾	¾
Tennessee Children's Orphanage, Nashville	Carrier	5	5½
<b>Offices</b>			
<b>Prior to 1935</b>			
Prov. Life & Accident Co., Chattanooga	Frigidaire	2½	3
Coca-Cola Co., Chattanooga	Carrier	..	..
Mountain City Mills, Chattanooga	Westinghouse	4½	5
Tennessee Electric Power Co., Chattanooga	Frigidaire	1½	2
Tennessee Electric Power Co., Chattanooga	Frigidaire	1	1½
Bryan Hosiery Mill, Chattanooga	Frigidaire	3	3¼
Reed Chevrolet Co., Nashville	General Electric	..	1
Third National Bank, Nashville	York	..	10
Nashville Banner, Nashville	Frigidaire	1	1½
Tennessee Electric Power Co., Cleveland	Frigidaire	1	1½
Tenn. Electric Power Co., Murfreesboro	Frigidaire	1	1½
<b>During 1935</b>			
Peerless Woolen Mill, Chattanooga	Westinghouse	7½	10½
Chattanooga Med. Co., Chattanooga	General Electric	1	1½
Hugh Smith, Nashville	Norge	2	2
C. Cornelius, Nashville	Frigidaire	¾	1.05
Apex Oil Co., Nashville	Frigidaire	¾	¾
U. S. Tobacco Co., Nashville	York	15	23
W. N. Estes, Nashville	Frigidaire	¾	¾
Tenn. Enamel Co., Nashville	Frigidaire	3	3½
Woosley Mills, Shelbyville	Frigidaire	3	3½
Tenn. Elec. Power Co., Columbia	Frigidaire	3	3½
Tenn. Elec. Power Co., Maryville	Frigidaire	3	3½
Tenn. Elec. Power Co., Murfreesboro	Frigidaire	3	3½
<b>1936</b>			
J. W. Fite, Nashville	Frigidaire	¾	¾
D. D. Canfield, Nashville	Carrier	1	1
So. Chem. Cotton Co., Chattanooga	Frigidaire	1	1½
American Bank, Nashville	Carrier	28	40
(Bookkeeping dept.)	..	..	..
American Trust & Bank Co., Chattanooga	Frigidaire	3	3½
Hardwick Stove Co., Cleveland	Frigidaire	7½	12½
<b>Residences</b>			
<b>Prior to 1935</b>			
C. G. Martin (2), Chattanooga	Frigidaire	1 & 1	.. & 1½
P. H. Hicks, Nashville	Frigidaire	¾	1.1
L. A. Bowers, Nashville	Frigidaire	1½	1½
L. A. Bowers, Nashville	Frigidaire	1	1½
Dr. Litterer, Nashville	Frigidaire	1	1½
Dr. Wells, Nashville	Frigidaire	1	1½
J. B. Hill, Nashville	Frigidaire	¾	¾
A. F. Smith, Nashville	Frigidaire	¾	¾
Bob Hunt, Nashville	Frigidaire	¾	¾
Mrs. Carrie Herman, Nashville	Frigidaire	¾	¾
John Cheek, Nashville	Carrier	..	12
Joe Holman, Nashville	Frigidaire	¾	1
G. Servier, Nashville	Frigidaire	¾	1
E. S. Armstrong, Martel, Tenn.	Frigidaire	¾	1
C. S. Kincaid, Clinton, Tenn.	Frigidaire	¾	1
Reeves Brown, Cleveland	Frigidaire	¾	¾
<b>During 1935</b>			
H. T. Hill, Nashville	Frigidaire	¾	¾
<b>During 1936</b>			
Charles Cohen, Nashville	Frigidaire	1½	2
H. Z. Lipscomb, Nashville	Strang	1	1½
Dr. Case, Nashville	Frigidaire	¾	¾
Maurice Gilbert, Nashville	Frigidaire	¾	¾
William Estes, Nashville	Frigidaire	¾	¾
William Hume, Nashville	Frigidaire	¾	¾
S. C. Hucheson, Chattanooga	Westinghouse	2	3
J. W. McMillan, Carthage	Frigidaire	¾	.60
W. W. McMaster, Carthage	Frigidaire	¾	.60
H. H. Swink, Crossville	Frigidaire	¾	.60
T. W. Newberry, Cleveland	Frigidaire	¾	¾

## Corozone Markets Portable Humidifier

CLEVELAND—Corozone Air Conditioning Corp. has just brought out the "Aquazone" junior portable, table-model humidifier, supplementing the line of floor-model humidifiers and humidifier-heating-coil combinations which it manufactures for summer, winter, and year-round air conditioning.

Small, compact, and designed for placement on table or stand, the humidifier is 13 in. high, 10 in. in diameter, weighs 9 lbs., has a capacity of 3 quarts of water, and an air circulation of 250 c.f.m.

The unit uses standard, 110-volt current, and is regularly finished in cordovan brown. Chinese red, bottle green, or ivory finish is available upon special order. The model is priced at \$32.50 retail.

## Donovan Studies Market For Air Conditioning

BLOOMFIELD, N. J.—Anticipating a substantial increase in both industrial and domestic air-conditioning installations, J. J. Donovan, general manager of General Electric's air-conditioning department, is touring the nation in a survey of air-conditioning trends.

Mr. Donovan predicts that air-conditioning business in the United States during 1937 will almost double that of this year. This is due, he believes, not only to improved business conditions, but to the fact that people in many parts of the country are commencing to regard air conditioning as more of a necessity than a luxury.

Mr. Donovan's itinerary includes Jacksonville, Atlanta, Birmingham, New Orleans, Dallas, and the West Coast.

## Pine Scent Added to Dance Hall Air

CHICAGO — Pine-scented breezes reminiscent of the north woods are being supplied dancers in a Chicago ballroom through a novel air conditioning attachment.

A pine oil dispenser using a gravity carburetor has been attached to the air washer. After the air is drawn through the filter pads, washed, and cooled, the pine oil is allowed to drip into the air washer where it is mixed with water as the air passes through.

About a quart of pine oil is required every eight hours to make the air in the ballroom pine-scented, and promoters of the idea claim that the system is adaptable to any air conditioner operating on a similar principle.

## New Waterbury Hotpoint Dealer Opens Shop

WATERBURY, Conn. — Federal Electric Co. new dealership for Hotpoint refrigerators and other General Electric appliances, was opened at 163 South Main St. here recently.



**McCord**  
Refrigeration  
and Air Conditioning  
PRODUCTS

- CONDENSERS
- COMMERCIAL EVAPORATORS
- DOMESTIC EVAPORATORS
- COMFORT COOLERS
- MARKET COOLERS
- AIR CONDITIONING SURFACE
- UNIT HEATERS
- BLAST HEATING SURFACE
- CATALOGS ON REQUEST

McCord Radiator & Mfg. Co.  
DETROIT, MICH.

# ESOTOO

Quantities Vary...



but Quality never Varies!

Every shipment is tested, checked, and rechecked before forwarding. Made as pure and free from moisture as the highest technical skill can make it, shipped to you in that same pure state, Extra Dry ESOTOO maintains its reputation for high quality wherever men enjoy the comfort of automatic refrigeration.

Extra Dry ESOTOO (liquid sulphur dioxide) and V-METH-L (Virginia methyl chloride) are shipped from 72 distributing points in this country and abroad.

For information or advice on any problem of refrigeration installation or servicing, write to F. A. Eustis, Sec., 131 State St., Boston, Mass.

## VIRGINIA SMELTING CO.

WEST NORFOLK, VIRGINIA



## Atlanta Air-Conditioning Installations

Name and City	Equipment and Installed by	Tonnage	Hp.
<b>Banks</b>			
1935			
C & S Bank .....	Frigidaire	1½	2
Fulton National Bank .....	Carrier	5	5½
1936			
Morris Plan Bank of Georgia.....	Carrier	8	10½
<b>Barber Shops and Beauty Parlors</b>			
1934			
Ansley Hotel Barber Shop .....	Frigidaire	5	5
Rich & Co. Beauty Shop .....	Frigidaire	10	18
1936			
Katherine Beauty Salon .....	Kelvinator	2½	3.1
<b>Clothing Stores</b>			
1934			
A. L. Zachry (Men's Furnishings).....	York	12	15
1935			
Adeline Apparel Shop .....	Airtemp	10	11½
Ardsley Apparel Shops.....	Airtemp	10	11½
Muse Dress Shop .....	Carrier	2½	3½
1936			
Weinbergers Shop .....	Carrier	5	5½
<b>Department Stores</b>			
1935			
Davison-Paxon .....	York	..	631
Hirsh Bros. ....	York	15	19
1936			
Butler Bros. ....	Frigidaire	10	12½
J. Regenstein Co. ....	Carrier	45	56½
Rich's, Inc. ....	York	420	716½
<b>Drug Stores</b>			
1935			
Lane's Drug Store .....	Carrier	18	24
1936			
Miner & Carter .....	Carrier	15	19
<b>Hotel Dining and Cocktail Rooms</b>			
1934			
Ansley Hotel .....	Frigidaire	10	12
1935			
Piedmont Hotel .....	York	19½	28
1936			
Ansley Hotel .....	Frigidaire	20	25½
Henry Grady Coffee Shop .....	York	1½	1½
Robert Fulton Coffee Shop .....	General Electric	5	6½
<b>Offices</b>			
1934			
Anderson-Clayton Co. (Broker).....	York	12½	21
Atlanta Oak Flooring Co.....	General Electric	2	2½
Coca-Cola Co. ....	Carrier	6	9
Montag Bros. ....	General Electric	2	2½
Oberdorfer Insurance Co.....	Frigidaire	1½	1½
Southern Bell Telephone .....	Frigidaire	3	3½
1935			
Atlanta Constitution .....	Frigidaire	1	1
Atlanta Paper Co. ....	Frigidaire	3	3½
Atlanta & W. P. R. R. ....	Frigidaire	2	1½
Courts & Co. ....	Frigidaire	20	24½
Fox Film Corp. ....	York	10	13
Frigidaire Co. ....	Frigidaire	2½	4
Paramount Pictures Corp. ....	General Electric	22	28
Harold Hirsh (Lawyer).....	York	¾	¾
Rich Bros. ....	York	¾	¾
R.K.O. Bldg. ....	York	7½	10½
Southern Spring Bed Co.....	Frigidaire	2½	3
Southern Service Corp. ....	York	6	10
Stein Printing Co. ....	York	2½	3½
Warren Bros. ....	York	10	13½
York Ice Machinery Corp.....	York	18	26
1936			
Atlanta Stove Works.....	Frigidaire	3	3½
Drs. Davison & Lowance.....	General Electric	15	17½
Du Pont Co. ....	York	20	29½
Economy Electric Supply.....	Carrier	3	3½
Exposition Cotton Mills.....	Frigidaire	5	6½
Lucas & Jenkins.....	York	1½	2.1
Upjohn Co. ....	General Electric	8	10½
<b>Residences</b>			
1934			
S. H. Dew .....	General Electric	2	2
H. W. Evans .....	General Electric	1½	1½
John Gelzer .....	Westinghouse	½	¾
L. S. Paletou .....	Westinghouse	1½	1½
H. J. Shafer .....	Westinghouse	1½	1½
Dr. W. F. Shallenberger.....	Frigidaire	1½	2
S. E. Ward .....	Westinghouse	1½	1½
1935			
P. W. Ballard .....	Carrier	3	3½
G. V. H. Moseley .....	York	¾	¾
1936			
Roy Freeman .....	General Electric	1½	2.1
J. E. Murphy .....	Kelvinator	½	1.05
<b>Restaurants</b>			
1934			
Davison-Paxon Tea Room.....	General Electric	40	46
Melba Cafeteria.....	York	23	43½
Original Waffle Shop .....	York	7½	7½
S & W Cafeteria .....	Carrier	75	103
Wisteria Garden .....	York	10	13
1935			
Frances Virginia Tea Room.....	Carrier	10	12½
Harvey's Restaurant .....	York-Ilg	27	40
Ship Ahoy Restaurant .....	York	20	27
Thompson's Restaurant .....	Frigidaire	13	19
Roy Young .....	York	7½	10½
<b>Miscellaneous</b>			
1934			
Atlanta Terminal Co. (Railway Terminal)...	York	30	30
Awtry & Lowndes (Mortuary).....	Frigidaire	3	3½
Crawford W. Long Hospital .....	Frigidaire	1	2
Crawford W. Long Hospital .....	Frigidaire	3	4
Sharp & Dohme (Biological Warehouse)...	Brunswick	¾	1
1935			
Atlanta Joint Terminals (For Cooling Cars)	Lipman & Frigidaire	15	20
Cascade Theater .....	General Electric	20	30
Georgia Power Co. (Salesroom).....	Kelvinator	40	49½
Georgia Power Co. (Store).....	Westinghouse and Kelvinator	4	3¾
Georgia Power Co. (Store).....	Westinghouse and Kelvinator	7½	10
Georgia Power Co. (Store).....	Westinghouse and Kelvinator	5½	4¾
Georgia Power Co. (Store).....	Kelvinator	6	6.40
N.C. & St. L. Railway (Car Cooling).....	Lipman, Frigidaire, and York	30	60
W. H. Reed Mfg. Co. (Industrial).....	York	20	29½
Southern Waxes Paper Co. (Processing Plant) .....	York	40	47
1936			
Atlanta Laundries (Storage Room).....	York	15	21½
Loftis Jewelry Store .....	Carrier	3	3½
J. J. Newberry (5 & 10 Cent Store).....	Carrier	55	65
Rialto Theater .....	General Electric	60	78½
F. W. Woolworth & Co.....	York	78	142.83

## Details on Air-Conditioning Installations Made in Springfield, Mass.

Name and Type of Business	Manufacturer	Hp.
<b>Prior to 1935</b>		
Hotel Kimball, Cocktail Room .....	York	15
Highland Hotel, Dining Room .....	York	7½
Tom McAnn Shoe Store.....	York	5
Paramount Theater .....	.....	235
Jensen's Candy Store .....	Carrier	20
Hotel Worthy, Cocktail Room.....	Carrier	2
Dickinson Streeter, Funeral Parlor.....	Westinghouse	5
Dwight Ellis Home, Residence.....	York	5
<b>1935</b>		
Hofbrauhaus, Restaurant .....	Carrier	20
Consolidated Eng., Inc. (Office).....	Carrier	2
Byron's Funeral Home.....	Carrier	9
Fiberloid Corp., (Office) .....	Carrier	21
Strathmore Paper Co., (Office) .....	General Electric	1½
Franklin Cafeteria .....	Carrier	9
Hotel Worthy .....	Carrier	20
United Electric Light Co., (Printing Dept.)	General Electric	9
Bldg. of Electric Progress (Office).....	Carrier	40
Federal Land Bank, (Office).....	Carrier	125
X Lunch .....	Carrier	3
Jane Alden Candy Shop .....	Niagara Blower	9½
Beverly Dress Shop .....	Carrier	2
Springfield Shopping News (Office).....	Frigidaire	1½
A. Hastings, (Home) .....	Carrier	1½
<b>1936</b>		
Highland Hotel, Cocktail Bar .....	Frigidaire	10
Electric Devices, (Office).....	Westinghouse	1
Lorraine Spaghetti Shop .....	York	6½
Jackson's Restaurant .....	Carrier	9
Hampden Grinding Co., (Workshop).....	Carrier	23
Mass. Mutual Insurance Co., (Office).....	General Electric	7½
Windsor Cafe .....	York	16½
Swett Bros., (Office) .....	Frigidaire	1
National Pants Store.....	Frigidaire	1
Fiberloid Corp., (Office).....	Westinghouse	7½
Grayson Shoppe, (Women's Apparel).....	Carrier	4½
John Holmes, (Residence).....	General Electric	1
Ralph Ellis, (Residence).....	General Electric	1
Foerster's Fur Store .....	General Electric	2
Wayside Inn, Cocktail Bar .....	General Electric	10

## Men's Store Stock Keeps Better in Conditioned Air

SALT LAKE CITY, Utah—Extra business and improved stock conditions are the result which make D. L. Chipman, assistant manager of The Firmage Store For Men, declare that air conditioning is one of the most valuable investments the store ever made.

"The equipment has not only brought us extra business, but because the air is cleaned and the humidity regulated we are able to keep our stock perfectly clean, and avoid the depreciation in rubber and elastic goods which usually comes from excess heat or dryness," Mr. Chipman declared.

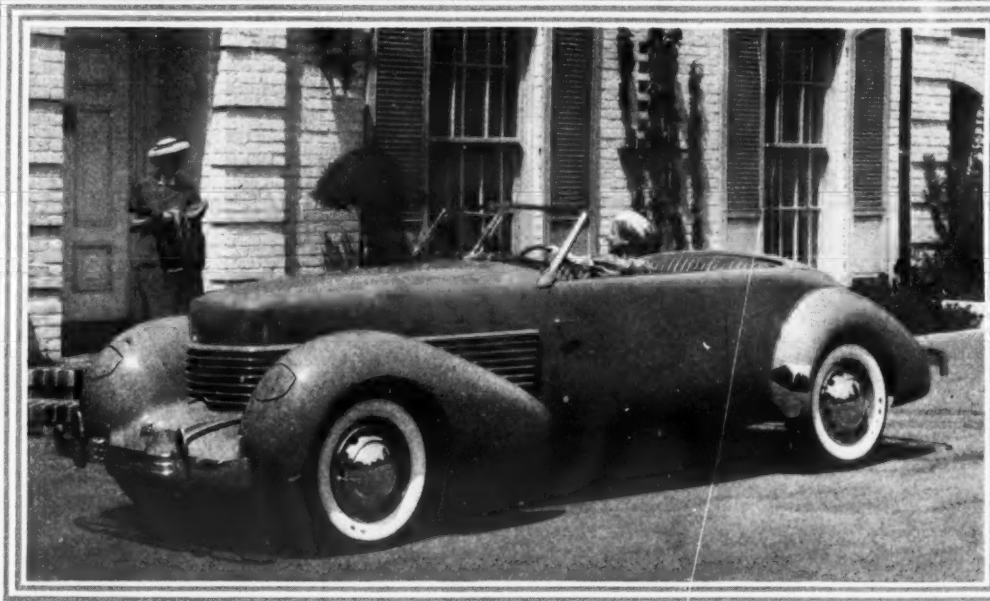
"People are beginning to expect and demand conditioned air the year round. A cool store in the summer is just as important as a warm one during the winter," he said.

Heat, cooled air, and humidity controls for the system are located in the store. Stale air is drawn out through an exhaust outlet, and the conditioned air blown in and circulated through five wall inlets. In the summer, store temperature is held at 10° below current outside temperatures.

## Carrier Booklet Tells About New Products

NEWARK—New developments in products manufactured by the Carrier Engineering Corp. here, are explained in the eight page folder titled "All Year Comfort Brought to Your Home." In it are pictured new air conditioner units, and heating equipment. Copy tells the advantages of winter and summer air conditioning.

QUALITY IN EVERY DETAIL



Racing cars pioneered Front Drive construction. Now the greater safety, easier steering and handling, and remarkable riding qualities possible only with Front Drive, are available to fine car buyers in the new Cord. We invite you to drive.

CORD

AUBURN AUTOMOBILE CO. AUBURN, INDIANA



## Air-Conditioning Systems Added to Lines Of Oklahoma Gas & Electric Co. in 1935

Name and City	Equipment and Installed by	Tonnage	Hp.
<b>Barber Shop</b>			
Central Barber Shop, Paul's Valley.....	Frigidaire	3	3.1
<b>Beer Parlor</b>			
Theo. Helwig, El Reno.....	Frigidaire	3	3.53
<b>Bank</b>			
First National Bank, Ardmore.....	General Electric	20	25
<b>Offices</b>			
Champlin Tire Store, Enid (Private Office)...	Frigidaire	3/4	1.03
Enid Terminal Elev. Co., Enid.....	Carrier	3	4.25
Freeman Equipment Co., Enid (2 Offices)...	Frigidaire	1	1.1
Herd-Bailey Hardware Co. (Private Office)...	Norge	1	1.05
Fred Small Co., Holdenville.....	Frigidaire	3/4	1.05
Air Reduction Sales Co., Oklahoma City...	Frigidaire	5	7.5
Dryer Clark Dryer, Oklahoma City.....	Westinghouse	1/2	.55
Kiowa Lumber Co., Oklahoma City.....	Frigidaire	3	3.5
Asa Lee Mayes, Inc., Oklahoma City.....	York	3/4	1
Bill Mosier's, Inc., Oklahoma City.....	Norge	3/4	1
Philip Pierce, Oklahoma City.....	Westinghouse	1/2	.55
Republic Life Ins. Co., Oklahoma City.....	Carrier	1 1/2	1.55
Scrivner-Stevens, Oklahoma City.....	Vilter	10	12.66

### Restaurants

Nick's Cafe, Muskogee .....	York	10	13.5
Earl's Cafe, Ardmore .....	General Electric	20	25
Black Hotel Dining Room & Coffee Shop, Oklahoma City .....	Carrier	15	23

### Residences

Dr. J. W. Adams, Chandler, (One Room)...	General Electric	1 1/2	1.01
J. F. Darby, Muskogee (Recreation Room)...	Westinghouse	1	1.65
L. H. Rooney, Muskogee (Three Rooms)...	Frigidaire	3	3.15
Dr. I. L. Cummings, Ada (Four Rooms)...	Westinghouse	2 1/2	2.75
P. A. Norris, Ada (One Room).....	Frigidaire	1	1.06
Dr. A. R. Suggs, Ada (Living Room).....	Westinghouse	1	1.55
W. W. Woodworth, Ringling, (One Room)...	Frigidaire	1	1.06
J. B. Brandenburg, Norman (Two Rooms)...	Kelvinator	1	1.6
Capt. J. S. Sucher, Norman (One Room)...	Frigidaire	1 1/2	.55
A. A. Brown, Oklahoma City (8 Rooms)...	General Electric	3	4
Ray Dolan, Oklahoma City (One Room)...	Westinghouse	1	1.55
I. W. Eckstein, Oklahoma City (One Room)...	Westinghouse	1 1/2	.55
W. R. Emerson, Oklahoma City (2 Rooms)...	Carrier	2	2.07
J. H. Everest, Oklahoma City (1 Room)...	Frigidaire	1 1/2	.55
Leslie Pain, Oklahoma City (7 Rooms)...	Carrier	6	7
R. A. Heffner, Oklahoma City (3 Rooms)...	Frigidaire	3	3.19
W. T. Kedy, Oklahoma City (One Room)...	Westinghouse	1 1/2	.55
M. A. Lyons, Oklahoma City (One Room)...	Westinghouse	1 1/2	.55
J. R. Porter, Oklahoma City (One Room)...	Frigidaire	2	2.06
L. H. Prichard, Oklahoma City (2 Rooms)...	Carrier	4	4.63
Geo. Sappington, Oklahoma City (1 Room)...	Frigidaire	1	1.06

### Stores

Betty Ray Shop, Oklahoma City, Ladies			
Ready-to-Wear .....	Ilg	20	21
Hierding Bros., Oklahoma City, Groceries	Baker	5	8.5
Lyons Shop, Oklahoma City, Ladies Apparel	Westinghouse	2 1/2	2.75
J. M. McEntee & Sons, Oklahoma City, Jewelry	Norge	7 1/2	8.25
J. C. Penney Co., Oklahoma City, Dept. Store	York	70	105
D. F. Peyton Co., Oklahoma City, Ladies Apparel	General Electric	15	21
Rosenfelds, Oklahoma City, Jewelry.....	Carrier	10	13.2
Streets, Oklahoma City, Ladies Apparel...	Westinghouse	16	21.5

### Miscellaneous

Central Appliance Co., Enid (Demonstration Room)	General Electric	2	2.1
Continental Oil Co., Ponca (Office Bldg.)...	Airtemp-York	287	400
Continental Oil Co., Ponca (Employees' Cafeteria)	Frick-Trane	20	22.5
Station WKY, Oklahoma City (Studio)...	Carrier	30	36.66
Hahn Funeral Home, Oklahoma City, (Chapel) .....	Westinghouse	16	22
Hahn Funeral Home, Oklahoma City, (Office) .....	Westinghouse	1 1/2	.55
State Highway Dept. Laboratory, Oklahoma City .....	York	3	3.3

## Noise Elimination Is Stimulating Sale of Air Conditioners

DETROIT—The attention focused on its noise-elimination feature has stimulated a new demand for air-conditioning equipment, reports J. K. Knighton, manager of Kelvinator's air-conditioning sales division.

"Street noises are decidedly distracting to any business man as he sits in his office; the same is true of office personnel," Mr. Knighton said. "It has been found that in air-conditioned offices, where the windows are kept closed, there has been a decided increase in efficiency."

An increasing demand for Kelvinator room coolers by business men for use in their private offices has been noticed in the past summer, Mr. Knighton said. Many of these men, he added, noting their own increased efficiency, have added air conditioning to the offices occupied by their employees.

Value of linking air conditioning and noise elimination, Mr. Knighton said, is shown by a recent installation made in the office of a business man who, only a year ago, spent \$1,500 for insulation against noise.

"Had this man installed air conditioning at that time," he concluded, "he would not only have gained the comfort value of correct temperature, but would also have eliminated noise, and saved himself a considerable amount of money."

## Conditioner in Hospital Overcomes Distribution Of Anaesthetic Gases

SEMINOLE, Okla.—The problem of suitably cooling an operating room, without permitting anaesthetic gases to be distributed throughout the rest of the building, has been solved in the air-conditioning system now being installed in Harbor hospital here by McEldowney & Son, Oklahoma City General Electric dealer.

The installation is expected to make the hospital the first completely air-conditioned clinic in this part of the country. Work is being carried out under the supervision of Harry Wilson, air-conditioning manager for McEldowney, who designed the system.

Equipment includes a year-round central plant General Electric conditioning system, using a 10-ton condensing unit and air conditioner connected to the duct system, and an atmospheric cooling tower, to be used with the condensing unit. A G-E gas fired steam boiler will supply steam for the heating coil in the conditioner.

Special provision is being made for automatic temperature control of the operating room, with elimination of odors from anaesthetics in the air returning to the central plant system. No spark-producing elements are exposed to the space or spaces where anaesthetics are kept. This obviates the danger of an explosion.

## Atlanta Distributor Named By Holcomb & Hoke

ATLANTA—Appointment of Clare & Co. as local distributor for the Holcomb & Hoke line of commercial refrigerator equipment was announced last week.

## Where Air Conditioners Were Installed in Oklahoma City—Jan. 1 to July 1, 1936

Name and City	Equipment and Installed by	Tonnage	Hp.
<b>Barber Shop</b>			
Fred Thompson .....	Carrier	5	5
<b>Beer Parlor</b>			
National Club .....	Norge	2	2
<b>Film Exchanges</b>			
Fox Films .....	Frigidaire	15	18
Paramount Pictures .....	Frigidaire	10	11.5
<b>Hospitals</b>			
Polyclinic Hospital .....	Frick-Trane	5	5
University Hospital .....	Frigidaire	1	1.5
<b>Hotels</b>			
Black Hotel .....	Kelvinator	5	5
<b>Miscellaneous</b>			
Sledd Mercantile Co. (Candy Storage).....	Norge	1	1.5
<b>Offices</b>			
Dr. Balyeat .....	Westinghouse	1	1.5
Dr. Clark .....	Frigidaire	3	3.5
Dryer, Clark & Dryer .....	General Electric	1	1
Dr. Mabry .....	Carrier	3	3.5
Oklahoma Maytag Co. ....	General Electric	3	3.5
Richard-Conover Hardware Co. ....	Kelvinator	1	1
State Governor's Office.....	Airtemp	2	2
State Highway Department .....	Airtemp	5	5
<b>Residences</b>			
Dr. A. J. T. Beatty .....	Carrier	3	3
Logan Cary .....	General Electric	3	3
L. C. Towler .....	Norge	2	2
N. I. Garrison .....	Frigidaire	1	1.5
Tom Green .....	Frigidaire	3	3
L. C. Prichard, Jr. ....	Frigidaire	3	3
Harrison Smith .....	Carrier	5	7
<b>Restaurants</b>			
Herman's Grill .....	Carrier	22	32
Flake's Cafe .....	Norge	3	3
<b>Stores</b>			
Allen's Shoe Store .....	Westinghouse-Buffalo	22	29
Barth's Clothing Store .....	Carrier	14	18
Fabyon and Gragg .....	Frigidaire	3	3
Jenkin's Music Co. ....	Ice-O-Matic	10	12
Katz Ready-to-Wear .....	Carrier	3	3
Kerr Dry Goods Co. ....	Carrier	30	36
Rothschild's B & M Clothing.....	Carrier	3	3.5
Mrs. Stovers' Bungalow Chocolates.....	York	3	3.5
Taylor's Ready-to-Wear.....	Carrier	10	11.5
<b>Total</b> .....		<b>34</b>	<b>206</b>
			<b>247.5</b>

## Crosley Distributor Puts On Unique Contest

HOUSTON, Tex.—Reader's Wholesale Distributors, Crosley distributor, has inaugurated a unique contest in cooperation with dealers in Houston and surrounding territory, in which 100 prizes ranging from a Crosley electric refrigerator down to smaller items are being offered.

Large newspaper space is being used to promote the contest. In the first 10 days 12 full pages of advertising appeared.

The contest is based on the Sheldor feature. In the advertisements are two pictures of a Crosley refrigerator—one with the cabinet empty and the Sheldor filled, the other with the food transferred from the shelves in the Sheldor to the interior of the cabinet, demonstrating how much food the Sheldor holds.

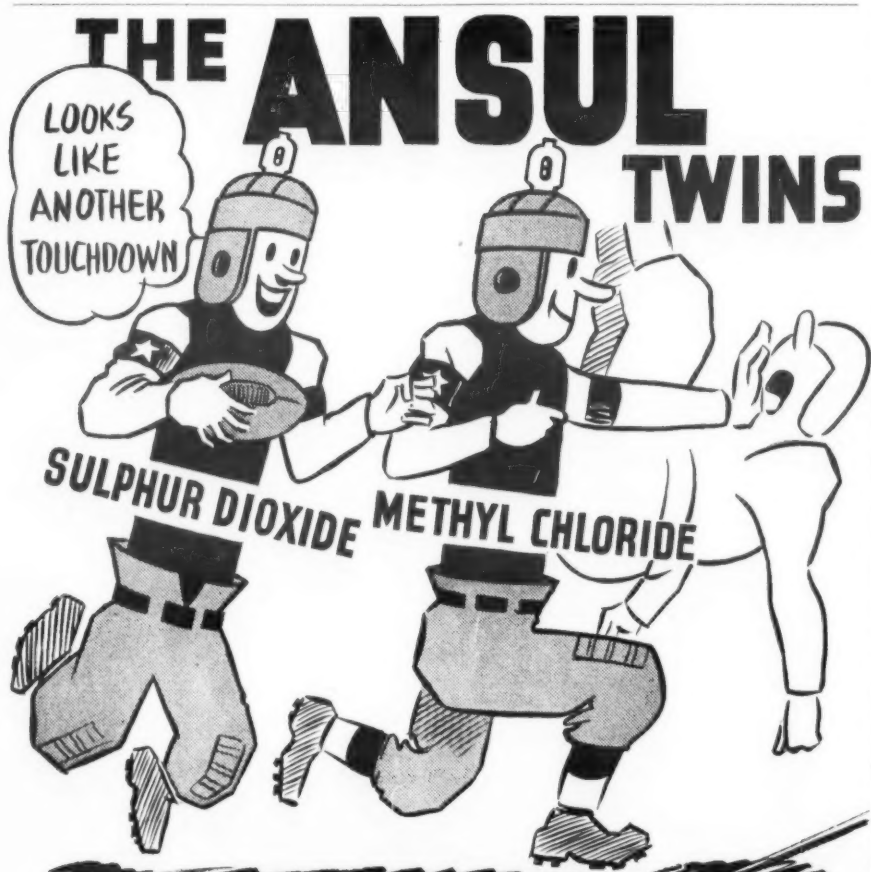
These pictures are to be cut out,

folded according to instructions in the ad and sent with a 25-word statement why the person prefers a Crosley refrigerator. Contestants are not required to make purchases of any kind.

## Roskin Expands to Handle Increased Sales Volume

BOSTON—As a result of a 103% increase in sales over the corresponding period of 1935, Roskin Distributors, handling Fairbanks-Morse refrigerators and Philco radios in Boston, Worcester, Albany, and Middletown, has enlarged and redecorated its showrooms, added to warehouse space, and doubled its sales personnel.

Roskin's promotion centering about the recent Sharkey-Louis fight proved so successful that the distributing company is now planning additional campaigns for its dealers, says Sam Roskin, head of the distributorship.



**ALL-AMERICA CHOICE FOR THE REFRIGERANT TEAM**

**ANSUL CHEMICAL COMPANY**  
MARINETTE » » » » » WISCONSIN

"AN OLD NAME IN A YOUNG INDUSTRY"

**CURTIS**

A Complete Line—86 Units

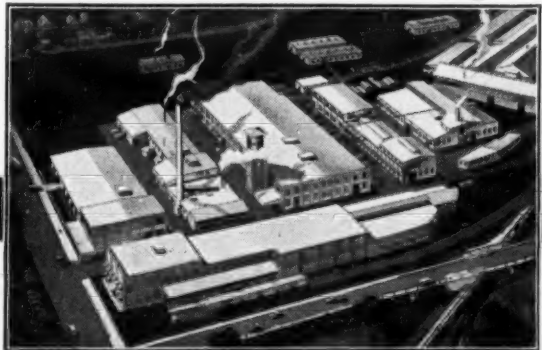
Fair Policy—82 Years' Successful Merchandising

Quality Workmanship—42 Years' Building Compressors

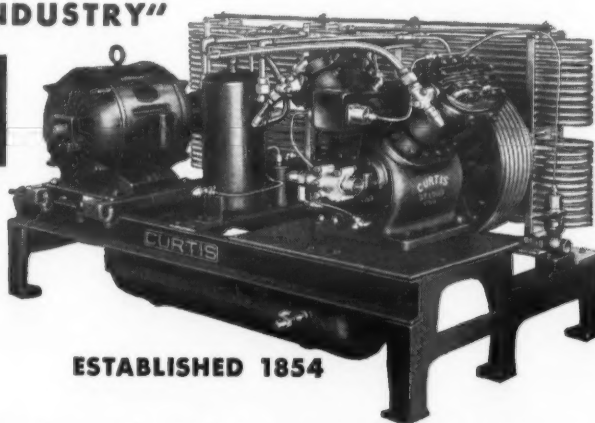
Financial Stability—AA1 Highest Capital & Credit Rating

Proven Design—14 Years' Building Refrigeration Units

Only by Building Permanently on This Complete Combination Can You Secure Sure Profits in This Fast Growing Industry—



Air View of Curtis 20 Acre Plant



ESTABLISHED 1854

**CURTIS REFRIGERATING MACHINE CO.**

Division of Curtis Manufacturing Co.  
1912 KIENLEN AVENUE • ST. LOUIS, MISSOURI

In Canada:

CANADIAN CURTIS REFRIGERATION CO., LTD.  
20 George St., Hamilton, Ont., Can.



## Air Conditioning Made Easy

By F. O. JORDAN

HERE is the first instalment of *Air Conditioning Made Easy*, a manual and textbook on air-conditioning engineering practice written by F. O. Jordan, assistant chief engineer of Airtemp, Inc.

Mr. Jordan has been engaged in air-conditioning engineering work for a number of years, having been with Kelvinator Corp. before joining Airtemp. He is a graduate of Purdue University and was an instructor at that institution for a time. He has written a number of treatises on air conditioning.

Instalments of "*Air Conditioning Made Easy*" will appear regularly in AIR CONDITIONING AND REFRIGERATION NEWS.

In his "Preface," Mr. Jordan discusses the problem "What Is Air Conditioning" in a somewhat light vein. In a more formal "Introduction" to the book, which will appear next week, the author explains the purposes of an air-conditioning manual, and then launches into the first section of his work, which deals with definitions of terms commonly used.

## What Is Air Conditioning?

What is air conditioning? Before embarking on a detailed study of the science of air conditioning, perhaps it would be advisable to know, at least approximately and in a general way, what air conditioning is.

Many persons pronounce the words "air conditioning" quite well, having visited various commercial establishments using the magnetic influence of those magic words to draw customers. But try appearing suddenly before any one of 99 out of 100 of your acquaintances and demanding:

"What is air conditioning?"  
The 99 will open their mouths for a time, or at any rate indulge in their characteristic manner of registering bewilderment. The remaining one individual may resort to sterner measures. For this question is somewhat like the one about—

"What is electricity?"  
Everybody knows that electricity is a boon to humanity, what with its adaptability to the electric curling iron and to the electric chair, and that air conditioning is another boon because of its advertising possibilities. Briefly, everybody knows some things that it will do. But—

"What is it?"  
**Says Prof. Whincus**  
**Whincus:**

Many things are being said about air conditioning. For corroboration of this statement, scan the pages of any popular periodical except the Congressional Record.

Under an article entitled "Domestic Air Conditioning Today," Prof. Whincus Whancus, the world famous expert on air conditioning and other things, we read:

"Domestic air conditioning, the infant industry, holds the potential promise of becoming the next stepping stone to a higher standard of living for the forgotten man. It possesses a distinction which is unique in the Annals of Industry in that the public demand for it is universal, yet its market is but 0.784% saturated. The desire of millions, it is the answer to millions of desires.

"Domestic air conditioning of today has been created in answer to a very real need for genuine air conditioning equipment which not only will warm and humidify during those long chill months of winter, but which actually will cool and dry those torrid, sticky days of summer.

"Few of us there are, who have not been driven from the joys of home into the wilted midsummer throngs winding their weary way theaterward, merely because of the cooling energy-restoring touch of the

'conditioned' atmosphere which they know awaits them there.

And fewer still are they who have not bowed their head and sworn by all that was Holy, that the day would come when they would have air conditioning of their very own just as soon as the genuine article should be available for the home—if the 'dern' thing could be made cheap enough.

"Domestic air conditioning of today is the answer to that vow. No longer is it necessary to forsake the family circle and endure the seething intimacies of the melting pot, merely to be cool. It now is possible to recuperate from the long wilting day in the office or factory, or rest from the throbbing heat of the streets by relaxing in the cool pleasant atmosphere of your home—in an atmosphere as fresh and zestful as the breath of spring—in an atmosphere produced, not by some bulky machine squatting in your parlor like some rumbling prehistoric monster, but by a unit remote, unseen; even as in the most expensive show house installation."

Doubtless the Professor is right about what he says, only what is the thing that he is talking about?

**Says the Advertisement:**

Next we turn to the advertising section. Surrounding something that looks like a cross between a filing cabinet and the grand piano is a group of young ladies with legs and asinine smiles. The noonday sun is visible as it projects its rays horizontally in through a north window, touching with crimson the apparently perspiring figure of the nude child which toys idly with this and that upon the floor.

"All through the house," says the text of the advertisement, "it circulates air that is warmed or cooled, moistened or dried, as demanded by comfort, and that is cleaned and purified as required by health. Yet the cost is but little more than the cost of a first class heating system alone. And then we have that intangible, yet inestimable value—life and health."

"Even as performance has been improved," continues the copy, "costs have been reduced. Following the spirit of leadership which has become traditional with the industrial family embodied in Herman J. Bungle Industries, Inc., and utilizing to the fullest extent the great natural advantages of research, engineering, and mass production which this fortunate relationship bestows—etc., etc."

Three pages further is a picture of something that ostensibly is a furnace and nothing more. Yet its manufac-

turer claims to be in the air conditioning business.

Apparently no consistent answer to the question, "What Is Air Conditioning?" is to be gleaned from the articles of the experts, nor from the ballyhoo(ey) of the manufacturers. Therefore, having decided that nothing is to be learned from such sources except what people are saying about air conditioning, we may recall the old saying about actions speak louder than words, and attempt to learn what people are doing about air conditioning.

Probing such sources of information as we may find, will show that people are doing plenty, as well as talking, for people are actually spending their money—conservative people who customarily play the cards in very close proximity to the chest, and refrain from donating to the pot unless they have 'em.

Not only are restaurant and hotel owners spending their money for summer air conditioning equipment, happy in the thoughts of the perspiring hordes who will be drawn their way thereby, but even Big Business is tromping all over itself in its effort to get both feet into the trough before everything good is gone.

Perhaps by this time you have begun to wonder if anybody knows the answer or even if the question is worth an answer. Yet if perchance you are one of those tenacious individuals who does not know enough to quit, you resolve to see the thing through to the bitter end just on general principles, even to the extent of looking up yourself an expert, and putting the question squarely up to him in person.

**Says the Salesman:**

So you ask an air conditioning salesman, for in your innocence you naturally presume that the man who sells something must know something about it, or at any rate—what it is. As a result, you listen to a discussion which you find somewhat difficult to restrain within the channels which you have chosen for it, as it becomes decidedly vague and uneasy when forced toward a positive answer to your question, although painfully definite and persistent regarding the salesman's willingness to help you really begin to live—with "Breath of Life" air-conditioning equipment in your home.

The nearest you can come to success in your quest for knowledge is a few mumbled phrases involving "Wet Bulb Depressions" and "Perspiration Lines," (concerning which you are familiar already, as you yourself have those things in varying degrees at times), for the salesman yet retains a few items touched upon at the three-day dealers' "school" recently attended by him.

**Says the "Expert":**

But at any rate you get a "lead" to follow—you look up the "expert" who conducted the school to which the salesman was exposed.

The expert talks willingly and without restraint, for he is accustomed to it. His discourse touches lovingly upon "adiabatic cooling," "psychrometric relationships" and other things quite foreign to your nature and to your burning question.

At last you depart sadly wondering what air conditioning is. You realize that the end is nigh, that despair is no more than a couple of easy jumps behind. Then one of those trifling incidents upon which the fate of great nations have hinged—fate playing her hand against the schemes of mere man. For as your eyes start to rise heavenward in supplication they pause upon a neon sign which proclaims:

"This So-And-So Is Air Conditioned" Blithely you enter. It can no longer escape. Soon you will know the worst. You do. No sooner has your front foot been placed beyond that threshold, than an icy blast strikes the back of your neck, and rapidly penetrating into even more personal areas, numbs your anatomy from here to there.

Changing your stance as rapidly as propriety will permit, you discover an adjacent location which seems dead and uncomfortably warm by contrast. Moving from place to place soon discloses the fact that every possible climatic combination from gale to doldrum, and from frigid to torrid, actually has been accomplished within the space of one room. A remarkable achievement. Any desired condition made available merely by moving from point to point—provided that such movements are made with the requisite rapidity. Is this air conditioning?

While yet able to escape, you hasten to another establishment which claims the alleged boon of air conditioning. Although the temperature within this establishment feels somewhat cooler immediately upon entry than the common or street variety of temperature, soon you note the characteristic feeling of rivulets of perspiration coursing down your spine and splashing from point to point.

Upon entering a third "air conditioned" room you wonder idly how

they happen to fall upon the architectural novelty of arranging the front door to open directly into the refrigerator, such is the icy chill which shocks your very bones even before all of you is yet inside. Furtively you attempt to brush frost particles from your tingling nose and elsewhere, and turn to hasten your aching joints stiffly from that chill void—only to marvel feverishly at the hitherto unnoticed blistering furnace-like texture of the outside air.

Only the dire need to escape from the unbearable torture of the blistering streets could drive you through the door of another sign proclaiming "air conditioning" as one of the attractions to be found inside. As you stagger into the interior, you are greeted by no decided sense of either cold or heat or air motion, but merely the pleasantly enervating sense of fresh coolness characteristic of the two perfect days customarily arranged per annum by Nature, merely to show how terrible the weather is the remainder of the time.

With the effortless sense of the Spirit of Springtime you move about. Conscious thoughts regarding comfort fade from your mind because you are comfortable. Complete freedom from discomfort relegates all thoughts of comfort to your subconscious mind, allowing what there may happen to remain of your mind to go about its business unburdened by thoughts of surroundings. With the corporeal body at rest, the mind and soul function as minds and souls should do.

Perhaps this heaven on earth, this example of air conditioning as air conditioning can be—is a dental parlor. If so, you decide to have that bicuspid given its long deferred overhauling, thus proving the power of air conditioning to make cash customers of inside window shoppers. If so there will be the usual array of periodicals at the disposal of the tentative victim such as you. Perhaps you may select one and idly turn its pages. And then you come to the full-page ad with the caption,

"WHAT IS AIR CONDITIONING?"

At last the answer. You read about a furnace which heats your house in winter, and a humidifier which can be guaranteed to frost your windows an inch thick and soak the very paper off your walls.

Screaming wildly, you dash from the scene. All of those totally different things cannot be air conditioning. If nobody even knows what air conditioning is, you decide certainly they do not deserve to sell you any of it. And you head for the wide open spaces to let Nature take her course with your health and comfort, as did man back in the Dark Ages.

**Says the Author:**

But this renunciation of civilization is now unnecessary. Merely by reading the following paragraphs you will find the answer.

Broadly speaking, air conditioning is the art or science of so treating or conditioning the atmosphere within an inhabited enclosure that the majority of occupants are comfortable, insofar as comfort is governed by the air surrounding the occupant.

It so happens that the temperature of the surfaces forming the enclosure also have something to do with human comfort, but the effect of surface temperature is minimized if the condition of the air is properly regulated.

If the temperature of the air is too high, the loss of the body heat of metabolism is retarded, so that an unpleasant sense of warmth results. If the air temperature is too low, the loss of body heat is so rapid that an unpleasant sense of cold is felt.

If the humidity of the air is too high, the evaporation of the perspiration which is emitted constantly from the pores is retarded so that perspiration accumulates and the body registers a hot sticky feeling. If the humidity of the air is too low, the cooling effect upon the body of the resultant rapid evaporation of perspiration will result in an uncomfortably cool sensation unless the temperature of the air is high enough to offset the cooling effect of evaporation.

A sense of coolness is produced by air currents also, because of the resultant rate of heat transmission from the body and the more rapid evaporation of perspiration from the skin. If the air velocity is too great, the sense of coolness may be too pronounced, while if the movement of air is too slow, a warm stuffy feeling may result, as well as stagnation and rare odor combinations.

In addition to these factors, the cleanliness and purity also of the air have an important influence upon comfort. However, the effect upon the senses of air temperature, humidity, velocity and purity are interdependent to a very high degree.

At higher humidities, lower temperatures are necessary for comfort, while at lower humidities, higher temperatures must be maintained. Furthermore, the effect upon comfort of given air velocities and degrees of contamination is dependent somewhat upon temperature and humidity. Therefore comfort cannot be measured by temperature alone, nor by any other one factor, but must be measured by "effective temperature" upon the human senses in which all influencing factors are included.

(Concluded on Page 16, Column 3)

**RIGHT DOWN THE LINE**  
**NEW C-H Replacement Control Has EVERY FEATURE YOU WANT**

The famous Cutler-Hammer Control, time-tested on a million refrigerators... is now available as a replacement unit.

Here are a few reasons for its popularity: Sure protection to motor, wide-range cold control, modern appearance, proved performance.

And here are Service Facts for the Service Man: 4 MODELS FIT NEARLY EVERY BOX. With two temperature models in 24" and 48" tubes or two pressure models for sulphur dioxide and methyl chloride systems—you're equipped to service 99% of the boxes in your community... with smaller stock, less money tied up, faster turnover, bigger returns, no shelf losses.

EASIER TO INSTALL, EASIER TO ADJUST. Unit mounts either horizontal or vertical, just two screws to insert. Differential and range adjustment made easily.

Every day more of the millions of old refrigerators move into the zone where they need repairs. With C-H Control that fits 99% of these boxes, that provides every advantage, it is easy to get the customer's O. K. CUTLER-HAMMER, Inc., Pioneer Manufacturers of Electric Control Apparatus, 1362 St. Paul Avenue, Milwaukee, Wisconsin.



Send NOW

For full facts on this profitable item, FREE booklet gives all information, diagrams, etc., also Replacement Control for popular make Beverage Coolers and Ice Cream Cabinets. Same simple, reliable, proven mechanism. Call on your nearest jobber for stock.

WE TAKE PLEASURE IN  
**ANNOUNCING**  
THE ARRIVAL OF  
THE LONG-DELAYED BOOK OF  
**SPECIFICATIONS**  
ALL MODELS—ALL MAKES—ALL YEARS

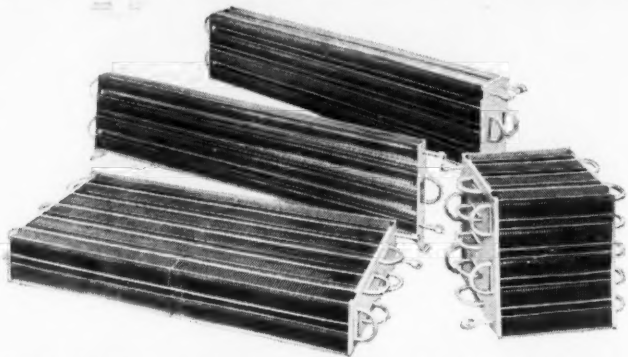
**CUTLER-HAMMER**  
REFRIGERATION CONTROL FOR REPLACEMENT SERVICE



## The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

### "Peerless for Performance"



### "WHERE THERE ARE NO JOINTS—THERE CAN BE NO LEAKS"

Full length tubing is used in all Peerless Fin Coils. The return bends are bent of the same tubing to which the fins have been applied. No soldered return bends to deteriorate and leak. "No joints—no leaks." A fin coil for every purpose. Write for complete catalog.

#### PEERLESS ICE MACHINE COMPANY

CHICAGO TWO FACTORIES NEW YORK  
515 W. 35th St. Cable address: PEERLESS-DETROIT 43-00 36th St., L.I.C.  
Representatives in all Principal Cities

Toss Out The OLD

Slip in The NEW

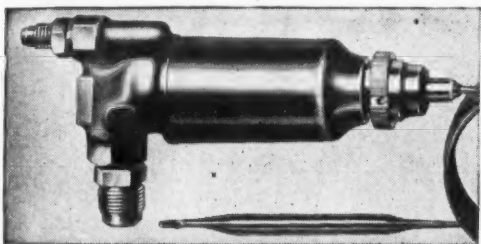
### It's Easy With EXACT REPLACEMENTS

For more than ten years we've studied the problems of the refrigerator service repair man. What we've learned has helped us to build stronger, more dependable Thermostats—and more EXACT REPLACEMENTS than you'll find in any other line. Write for new Bulletin, Free.

Ranco, Inc., Columbus, Ohio

## RANCOSTAT

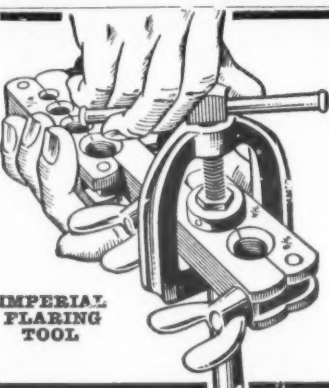
### STANDARD REFRIGERATING APPLIANCES



#### THERMOSTATIC EXPANSION VALVES

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

### AMERICAN INJECTOR COMPANY 1481-14th Street, Detroit, Mich.



### A Flare in 30 Seconds with the IMPERIAL FLARING TOOL

A POPULAR example of this up-to-date line. A leakproof flare at once for S.A.E. joints, without splitting or cracking the tube. No loose dies to get lost or mislaid. No vise required. No need to disconnect the tube from installation.  
No. 175-F. 3/16", 1/4", 3/8", 1/2", 5/8", 3/4" tube \$4.85  
Order from your jobber. Catalog 77-E on request.

#### IMPERIAL BRASS MFG. CO.

565 S. Racine Ave., CHICAGO

### Complete Charging Kits

consisting of

- 1-R100 Charging Connection
- 2" or 2 1/2" H. P. & Compound Gauges.
- 2-12" Flexible Charging Lines
- 1-Slip-handle Valve Wrench.
- 1-Metal Box for Entire Assembly

R103 - 2" Gauge Kit - \$5.75  
R104 - 2 1/2" Gauge Kit - \$6.15

The above kits are the most necessary item to your tool kits. Get them from your jobber.

Manufactured by

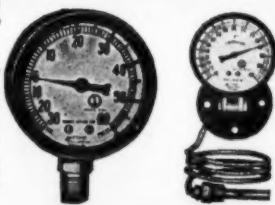
FRANKLIN MACHINE PRODUCTS Co., Inc. 663 Broadway New York, N.Y.

### Refrigeration Instruments by Marsh

MARSH ZERO ADJUSTMENT (patent pending) assures perfect accuracy at every reading of the instrument.

Any instrument fitted with this construction can be calibrated on the job by the service man, in the plant, laboratory or instrument department within a very few minutes without the necessity of dissecting the instrument or gaining access to the interior mechanism.

Manufactured in front zero adjustment as illustrated for stationary service or back zero adjustment for portable service.



Jas. P. Marsh Corporation  
2067 SOUTHPORT AVE., CHICAGO, ILL.

## "Air Conditioning Made Easy"

(Concluded from Page 15, Column 5)

### Four Qualities of Air Must Be Controlled

Obviously in order to manufacture comfort at all times, air conditioning equipment must control throughout the entire year the following qualities of the air:

- Temperature
- Humidity
- Velocity
- Purity or Cleanliness

Specifically, therefore, in order to be justly classified as air conditioning equipment, any man's product must heat and humidify the air during the winter season, cool and dehumidify the air during the summer, and circulate and clean the air at all times, all functions being performed in the proper degree for effective human comfort.

Note that the phrase "in the proper degree" implies satisfactory inherent or automatic controls. Any equipment which does not perform the above functions in their entirety cannot rightly be called "air conditioning" equipment unless accompanied by the proper explanatory or restricting terms, such as "Summer Air Conditioning," "Winter Air Conditioning-Uncontrolled," etc.

While the prospective customer may purchase as few or as many of the above functions as he desires, it behooves him out of justice to the manufacturer to find out what he is buying when comparing competitive prices and equipment.

If the bid of one manufacturer is four times that of another, the prospect should not brand the high bidder as a profiteer without investigation, for the high bidder may be offering year-round air conditioning with all appurtenances as against the low man's equipment for winter conditioning only (perhaps without control).

In addition to the above considerations there are many others regardless of whether you are the manufacturer, the field engineer, or the consumer.

### The Problem of the Manufacturer

Before even beginning to design a line of equipment, the manufacturer must do two things. First he must study the field for the double purpose of ascertaining its needs so that his equipment will meet them effectively, and of determining the most active and promising portions of the market with respect to usage and application so that he will not concentrate his time and money upon poor selling models.

Second, he must conduct a comprehensive program of research and development, so that his equipment will be aided rather than hindered by the laws of nature. Having accomplished these duties, the manufacturer is now ready to design the equipment, remembering to apply the lessons learned during his study of the field and of nature, and to design the equipment for economy of manufacture, ease of service, and satisfactory performance.

Having created a line of meritorious models, the manufacturer is yet confronted with the serious problem of devising a method of field engineering which reduces overhead to the minimum because of its simplicity, yet which obviates the possibility of "sour" installations because it gives due consideration to all factors whose order of importance warrants their consideration.

As soon as the prospective manufacturer of air conditioning equipment has perfected a line of equipment and his field engineering procedure, he is in position to start doing himself some good, and being of genuine service to uncomfortable humidity—provided only that he has equipped himself with an effective and efficiently supervised distributor organization.

### The Problem of the Distributor

In order to stand a ghost of a chance to make money for anyone, the distributor for air conditioning must be not only an "A" No. 1 merchandiser, but such is the complexity and importance of the problems to be solved in making the air conditioning system and its owner agreeable with each other, that he must be an installation expert and successful contractor as well.

From the point of view of anyone who hopes to wangle a living out of the air conditioning industry, it is of life-and-death importance that such optimistic people make careful note of the above hastily mentioned precepts, and all of their ramifications. If this is not done, unsatisfactory equipment will result, and consumer costs will prevent the growth of the industry beyond the adolescent stage because only the most successful

racketeer in every community can buy the luxury which it affords.

Even the prospective consumer should check the equipment and organization of the maker whose product he contemplates, unless he is willing to spend what the depression left him, for equipment whose use necessitates the reservation upon the premises of a private bedroom for the service man, and unless he is one of those sweet souls who delight in paying off the overhead resulting from the mistaken policies and methods of others.

The information necessary for compliance with the above advice? Read the ensuing articles.

In the various sections as listed in the Table of Contents of this direct frontal attack upon the great question—"What Is Air Conditioning?"—there will be found discussions of fundamentals leading consistently up to and including the actual design of equipment itself and of the complete air-conditioning system, the formulation and description of methods of conducting the field engineering, and the determination of policies and methods of organization.

In addition to this, in Section 21 will be found a concentration of all the data necessary for designing a year-round air-conditioning system of the most complete and complicated type.

### TABLE OF CONTENTS OF THE BOOK

- Section No. 1—Introduction.
- Section No. 2—Definitions and Simple Thermodynamics.
- Section No. 3—Coil Performance.
- Section No. 3A—Water Cooler Performance.
- Section No. 4—Condensing Unit Performance.
- Section No. 5—Air Movement—Ventilating Requirements.
- Section No. 6—The Complete Air-Conditioning System for the Cooling Season.
- Section No. 7—Heating.
- Section No. 8—Miscellaneous Equipment.
- Section No. 9—Choice of Type of System.
- Section No. 10—Installation Hints.
- Section No. 11—Sales Points.
- Section No. 12—Organization.
- Section No. 14—Controls and Zoning.
- Section No. 15—Design of Equipment.
- Section No. 16—Test Data.
- Section No. 20—Field Engineering.
- Section No. 20A—The Domestic Load and Estimate.
- Section No. 20B—The Commercial Load and Estimate.
- Section No. 20C—Design of the Distribution System.
- Section No. 21—Field Data.
- Section No. 30—Methods of Selecting Equipment; Sample Specifications.

### START NOW

To learn the fundamentals of air conditioning

Note: Next week Mr. Jordan will present the essential terms (and their definitions), together with an explanation of the thermodynamic principles which one must understand in order to get anywhere in the study of air conditioning.

Read the sections of this new book each week as they will appear serially in the News and you will acquire a clear understanding and practical working knowledge of air conditioning.

## V-Meth-L to Be Used By Explorers

NEW YORK CITY—Several cylinders of methyl chloride have been shipped by Virginia Smelting Co. to Daru Island, New Guinea, for use in the specially designed photographic developing machine of Richard Archbold's New Guinea expedition.

The expedition is collecting birds and mammals for the American Museum of Natural History, and plants for the New York Botanical Society.

Interior of New Guinea is one of the few unexplored regions in the world. In the journey into this unknown area, Mr. Archbold's expedition is taking a technique new to exploration.

From the base on Daru Island, the inland party, transported up the Fly river about 550 miles by airplane, will establish an emergency camp and proceed on foot. Food, collecting materials, and other supplies are delivered by parachute, an automatic ripcord attached to the plane opening the 'chutes and letting 100 lbs. of supplies land safely in the camp clearing.

A receiving and transmitting short-wave radio set, carried by the inland party, maintains communication with the base camp and with the plane.

Besides these modern methods, automatic refrigeration is used in the photographic developing machine at the base camp on Daru Island.

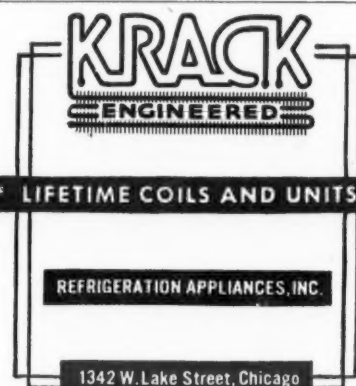
This unit is a water-cooling and circulation method for retaining a constant temperature of the developing and hypo solutions as well as a constant temperature of the water wash. It is a compact, all-metal unit, weighing less than 150 lbs., equipped with handles for convenient transportation. It consists of a refrigerant compressing unit, associated coils, motor, etc., for the cooling element.

The unit has a capacity of inducing a 14° drop in temperature of the water at the rate of 30 gal. per hour.

### Victor Issues Supplement To Gasket Catalog

CHICAGO—Victor Mfg. & Gasket Co. has issued a six-page supplement to its refrigerator gasket catalog, punched so that it may be inserted in the original catalog.

The supplement contains several numbers which have been added since the publication of the catalog.



*It's the COMBINATION Idea that makes*

**PELCO Electric**  
Beverage-Food COOLER

for Restaurants, Taverns, Road Houses, Refreshment Stands, Billiard Parlors, Bowling Alleys, Resorts, Cigar Stores, Delicatessens, Bakeries, Creameries.

So Easy to Sell!

Pelco appeals instantly to any dealer that serves bottled beverages and lunches! It combines an unusually efficient cooling compartment—from room temperature to 40° in 30 minutes—and a roomy refrigerator that keeps foods in perfect condition to serve. Saves time—saves steps—operates economically.

Has an amazing sales record! Introduced less than a year ago... it is now one of the leaders in its field! GET the FACTS now. Write to Desk A.

Refrigerator Division  
**PORTABLE ELEVATOR MFG. CO.**  
BLOOMINGTON, ILLINOIS

*The Most Practical Unit You've Ever Seen!*



## Questions

### Milk Cooling Data

No. 2914 (Dealer, Ontario, Can.)—"On page 32 of the July 29, 1936, issue of your paper I read an answer you gave to a Pennsylvania manufacturer on milk cooling."

"As I am anxious to get the same information, please send me the same two issues, which were May 8, 1935, and July 4, 1934, if they are still available. I am enclosing 25 cents for same. If this is not enough please let me know."

"Also I wonder if you happen to know where I could get some information on the servicing of the Hayes Electric Refrigerator which was manufactured by the Hayes Wheel & Forging Co., Toronto, about five years ago."

"I am a new subscriber to your valuable paper and always look forward to receiving my copy each week."

Answer: We do not have any information on the servicing of this particular make.

### Champion Unit Parts

No. 2915 (Distributor, Illinois)—"Kindly notify this company as soon as possible as to where we can purchase parts for a Champion refrigerator as we are in need of it for a rush order. Is there one in our city?"

Answer: We have been unable to find a company that lists these parts. However, it is possible that you might be able to get a part that would do the job by describing it to one of the local refrigeration supply jobbers.

### Bottled Beverage Coolers

No. 2916 (Dealer, Indiana)—"Please give me the names and addresses of manufacturers making electric bottle coolers. I know of Crosley and Kelvinator—give me other names."

Answer: See below.

No. 2917 (Parts Jobber, Ohio)—"One of our customers has asked us to advise him the name of a manufacturer who makes a refrigerated cabinet for cooling bottled beer. Will you please give us the names of any manufacturers you have so that we can advise him?"

Answer: See below.

No. 2918 (Dealer, Illinois)—"We would like to know the addresses of a source of supply of bottle boxes for cold drinks. We would like those that manufacture all metal boxes, well insulated, of the slide top type."

"We have one of your old directories but from it we are not able to distinguish the ones that make boxes of the above type."

Answer: Manufacturers of beverage coolers and beverage cooler boxes are listed on pages 167 through 173 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

The following companies have introduced beverage coolers since the DIRECTORY was published:

Eagle Foundry Co., Belleville, Ill.  
Pemco Mfg. Co., Bloomington, Ill.  
Undabar Electric Beverage & Food Coolers Division of General Import Co.  
220 N. Fourth St., St. Louis, Mo.

### Potential Market in Tampa, Fla.

No. 2919 (Distributor, New York)—"I want to send in a subscription for the ELECTRIC REFRIGERATION NEWS for the six months' period starting July 1—in other words I would like my sub-

scription back-dated, and all back issues for the period mentioned, sent to me.

"At the same time I want to take advantage of your combination offer with regard to the 1935 AIR CONDITIONING AND REFRIGERATION MARKET DATA BOOK."

"Please advise your rate for the combination mentioned."

"I presume the statistics given in the above-mentioned book will help me in my endeavor to arrive at a potential market for electric refrigeration in the city of Tampa, Fla."

"At this time I am securing such information with regard to the potential of the Tampa area, as is available, with the thought in mind of a possible distributorship for household electric refrigerators. Any suggestions you can make which will help me to secure data, pertaining to this subject, will be appreciated."

Answer: A 6-month subscription (\$1.50) and the MARKET DATA BOOK (\$3.00) will cost \$4.50. We offer a combination rate of \$5.00 for a 1-year subscription and the book.

### Meat Counter Baffles

No. 2920 (Dealer, Indiana)—"Please give me the address of the manufacturer that makes the baffles for meat display counters with the round holes in them."

Answer: Try the following manufacturers:

Acme Welded Pipe & Coil Co.  
1700 Cooper St., Jackson, Mich.  
Bush Mfg. Co.  
100 Wellington St., Hartford, Conn.  
Fedders Mfg. Co.  
57 Tonawanda St., Buffalo, N. Y.  
McCord Radiator & Mfg. Co.  
2587 E. Grand Blvd., Detroit, Mich.  
Peerless Ice Machine Co.  
515 W. 35th St., Chicago, Ill.  
Refrigeration Appliances, Inc.  
1342 W. Lake St., Chicago, Ill.  
Rempe Fin Coil Co.  
340 N. Sacramento Blvd., Chicago, Ill.  
Trenton Auto Radiator Works  
626 Brunswick Ave., Trenton, N. J.

### Ethyl Chloride Source

No. 2921 (User, Pennsylvania)—"We own a refrigerator with a Holmes unit, and we are unable to buy ethyl chloride in Erie, Pa. Would you kindly let us know where we could buy this gas in 5-lb. tubes?"

Answer: For information on where ethyl chloride is available write to the following two companies:

Matheson Co., East Rutherford, N. J.  
R. & H. Chemicals Dept.  
E. I. du Pont de Nemours & Co., Inc.  
Wilmington, Del.

### Bar Type Door Openers

No. 2922 (Manufacturer, Texas)—"Please put us in touch with a hardware manufacturer, who can supply us with Bar type refrigerator door opener similar to the Crutcher Bar door lock as used on Sears Roebuck Coldspot. This lock seems to be the spring type lock throwing the door open when you press on the Bar."

"We have a much larger box than is ordinarily used for domestic refrigeration, the box having approximately 30 cu. ft. capacity. It would, therefore, take a much larger lock, but mechanism working on same order."

Answer: Manufacturers of refrigerator hardware both for commercial and domestic use are listed on pages 180 and 230 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

We do not know who makes the door opener for Sears Roebuck, but if you will write Mr. Gudeman, department 622, Sears, Roebuck & Co., Chicago, he may give you this information. You might also try Seeger Refrigerator Co., St. Paul, Minn., for this information.

### Deodorizers

No. 2923 (Manufacturer, New York)—"We have received from our representative in Japan a letter reading:

"I find there is some demand for Deodorizers for household refrigeration cabinets. Lines suggested to me are 'Deodaire,' 'Cleanaire,' and 'Sis Deodorizers.' Can you possibly send me prices, samples, and all information on any of the above or similar products?"

"I wonder if by any chance you can tell me where we can secure a product that will meet the requirements of our Japanese agents."

Answer: Contact the Walway Co., 8737 Kercheval Ave., Detroit, Mich.

### Sales Data

No. 2924 (Engineer, New York)—"I have been referred to you by Mr. David L. Fisk, secretary of the A.S.R.E., upon my inquiry as to:

1) The number of domestic electric refrigerators produced by all manufacturers, shown year by year, and

2) The same for absorption refrigerators.

3) How many of each are estimated to be in operation today for 5 years, 10 years, 15 years?

4) How many are produced by each of the leading manufacturers?

5) The number of compression units, exclusive of domestic refrigerators sold to or manufactured by air-conditioning manufacturing concerns (small sizes).

6) Can you give the names of manufacturers of domestic absorption machines, either wet or dry, and which of them besides Electrolux have been in continuous operation for more than five years and for more than 10 years?

"Any information that you have available on this subject would be much appreciated, including the number of machines exported."

Answer: 1. The number of household electric refrigerators sold by all manufacturers is shown by years through 1934 in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK. The figure for 1935 was published in the Feb. 5, 1936, issue of the NEWS.

2. We have no data on the sales of absorption refrigerators.

3. For information on the replacement trend of household electric refrigerators, see the Jan. 1, 1936, issue of the NEWS.

4. Sales figures of the individual manufacturers are not made public.

5. Sales of commercial condensing units by manufacturers who are members of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) are reported monthly in the NEWS. These figures are not broken down by types of application.

6. Manufacturers of absorption machines other than Electrolux include the following: Crosley Radio Corp., Cincinnati, Ohio; Gibson Electric Refrigerator Corp., Greenville, Mich.; Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio; and the Allyn Refrigerator Corp., c/o Cleveland Tractor Corp., East 193rd St., Cleveland, Ohio.

### Price of 1934 Model

No. 2925 (Dealer, Illinois)—"Will you kindly quote us the price on a Model AZ-3 Norge 1934 model refrigerator?"

Answer: We cannot give you this information, as Norge did not submit prices with specifications of its 1934 models submitted for publication in the NEWS.

Even if we knew the original price of the model, we could not make any suggestion as to its price now as a used refrigerator.

### Refrigeration Shows

No. 2926 (Advertising Agency, Illinois)—"Our client has asked us to get a list of shows that might be of interest to them. Can you give us the date on any shows in the refrigerating and air-conditioning fields for the balance of this year and the first part of next?"

Answer: We believe that the two shows of chief interest to manufacturers of refrigeration equipment and parts during the balance of this year will be the Dairy Industries Exposition the week of Oct. 12 in Atlantic City, at which a considerable number of refrigeration products will be shown; and the exhibits which will be held in Memphis the week of Nov. 9 in conjunction with the meetings of the Refrigeration Supplies and Parts Manufacturers Association and the Refrigeration Service Engineers Society.

### Service Convention

No. 2927 (Manufacturer, Georgia)—"Will you kindly give us the details of the convention of refrigeration engineers and service men which we understand is to be held in Memphis during the month of October?"

Answer: The convention of Refrigeration Service Engineers Society will be held Nov. 11, 12, and 13 in Memphis, Tenn.

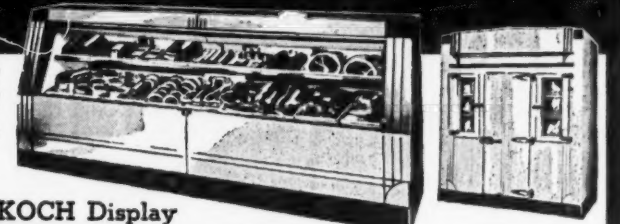
## The Buyer's Guide

Special rates apply to this column only.  
Write Advertising Dept. for full information.

### DISTRIBUTORS and SALES AGENTS... WANTED

### for KOCH COMMERCIAL REFRIGERATOR CABINETS

Some very good territories still available



Complete Market Equipment by KOCH

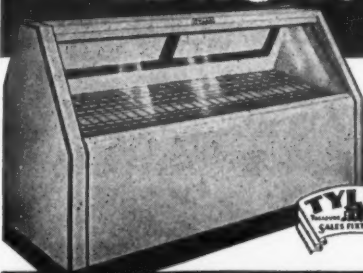
KOCH Display Cases Have 4-in. Corkboard Insulation, Triple Plate Glass, and Are Porcelain Clad

Write for full information, stating qualifications

KOCH REFRIGERATORS

North Kansas City, Mo.

### TYLER'S NEW WELDED STEEL REFRIGERATOR CASES



At last a general purpose case at a sensible price. Offers every advantage of the most costly cases at tremendous savings. Modern in every detail. Comes equipped with coils. Single and double duty models.

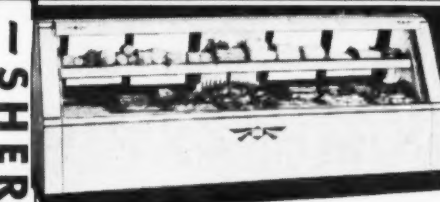
### AN AMAZING VALUE

Hundreds in use. Perfect refrigeration for meat, dairy and delicatessen products and all perishables sold in food stores. Write or wire for all the facts.

TYLER Sales-Fixture CO. Dept. E, Niles, Mich.

3 INCH INSULATION-TRIPLE GLASS

### SALES AGENTS & DISTRIBUTORS WANTED



Desirable territories now open. Write us for details.

We manufacture a complete line of DISPLAY AND STORAGE EQUIPMENT FOR RETAIL FOOD STORES

Refrigerator Cases of all kinds, Market Coolers, Reach-in Boxes, Meat Racks, Porcelain Partitions, etc.

Use the complete Sherer line to maintain your volume and profits as the demand for household boxes tapers off. Write us today.

SHERER-GILLET COMPANY

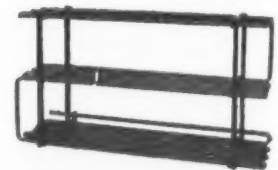
MARSHALL, MICHIGAN

ESTABLISHED 1852

### ACME PIPE COILS

"THE COILS BY WHICH OTHERS ARE JUDGED"

FLAT  
DOUBLE FLAT  
BOX OVAL  
CYLINDRICAL  
RECTANGULAR

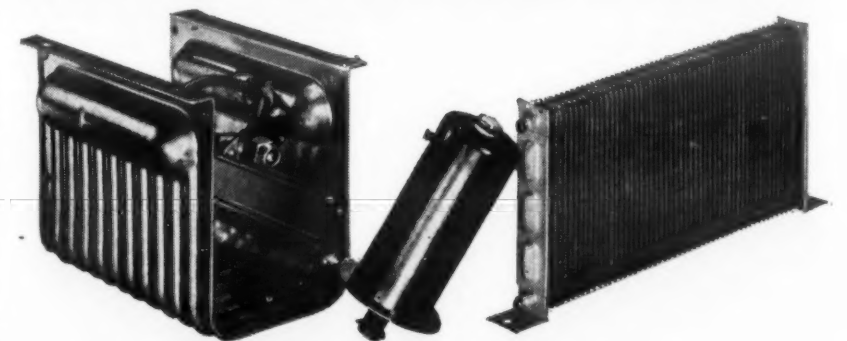


HARDENING ROOM COILS

ACME PROCESSED

JACKSON ACME INDUSTRIES, Inc. MICHIGAN

### SUPPLYING THE REFRIGERATION INDUSTRY



Evaporators, Receivers, Condensers, Compressor Domes, Compressors and Mechanical Parts. Also "Houdize," a perfected process for permanently uniting ferrous or non-ferrous metals.

OAKES PRODUCTS CORP.  
North Chicago and Decatur, Ill.

HOUE ENGINEERING CORP.  
Buffalo, New York

DIVISIONS OF HOUDAILLIE - HERSHEY CORPORATION  
General Executive Offices: Detroit, Mich.

## NOISELESS AS A PRAIRIE NIGHT

### THE GILMER V-BELT

Easy to see why consumers prefer the Gilmer V-Belt for small unit V-drives. Durable, slipless—to be sure. But here's the big reason: It's noiseless... noiseless as a prairie night. And you'll like to stock it because it comes sleeved and marked for quick identification... and because it's made in standard sizes to fit all refrigerators, air-conditioning equipment, oil burners, beer pumps, water pumps, washing machines and wood-working tools.

L. H. GILMER CO.

Tacony, Philadelphia

Branch Offices & Warehouses

New York Chicago Dallas San Francisco Seattle



MAKERS OF THE WORLD'S BEST-KNOWN V-BELTS



# The Buyer's Guide

Suppliers Specializing in Service to the  
Refrigeration and Air Conditioning Industries

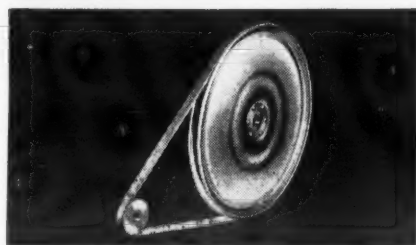
LEADING MAKERS OF REFRIGERATING AND  
AIR CONDITIONING EQUIPMENT STANDARDIZE ON

## Dayton V-BELTS

● Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

Dayton V-Belts are the logical choice because they provide silent, dependable transmission—because their powerful grip prevents slippage—because they run smoothly without weaving, twisting or vibrating.

A nearby distributor carries a complete stock of Dayton V-Belts at all

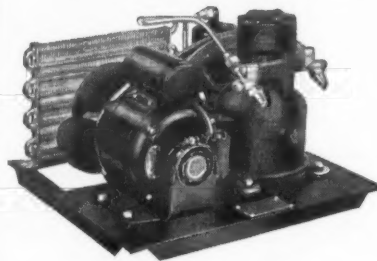


Whether for Fractional or a Thousand H.P. there is a Dayton V-Belt Drive for the job.

times and can quickly supply you. Write us for price list and complete information.

THE DAYTON RUBBER MANUFACTURING CO. • DAYTON, OHIO  
World's Largest Manufacturer of V-Belts

CONDENSING UNITS and COMPRESSORS  
FOR  
HOUSEHOLD REFRIGERATION

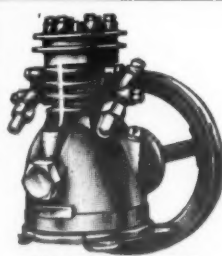


BY  
**JOMOCO, INC.**  
A SUBSIDIARY OF THE  
JOHNSON MOTOR CO.  
Waukegan, Ill.  
CABLE ADDRESS: JOMOCO-WAUKEGAN

# MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



**"CHIEFTAIN"**  
QUALITY-BUILT  
COMPRESSORS and  
CONDENSING UNITS

All bearings diamond bored. Positive lubrication of parts by newly developed process plus forced feed lubrication in all models.

Sizes: 1/6, 1/5, 1/4, 1/3 h.p.  
Write for prices

**TECUMSEH PRODUCTS CO.**  
Tecumseh, Mich.

### OFFICES

New York  
480 Lexington Ave.  
Chicago  
828 N. Wells St.  
Detroit Export  
Department  
1002 Palms Bldg.  
Los Angeles  
122 Mariposa St.  
St. Louis  
577 Arcade Bldg.  
Dallas  
215 S. Pearl St.

# REMPE

FIN COILS  
for Commercial Use

Rempe Co. • 340 N. Sacramento Blvd. • Chicago, Illinois



### MANUFACTURERS

Seamless  
Brass & Copper Tubing  
Refrigerator Tubing  
Water Service Tubing  
Carton Packed Tubing  
Formed Tubing  
Electro Tin Plated Tubing

## Letters from Service Men

### Service Men Are Invited To Register

Pilgrim Refrigeration Co.  
Jobbers & Exporters of Used & New  
Electric & Gas-Domestic & Commercial  
Refrigerators  
43-47 Thirty-Ninth Place  
Long Island City, N. Y.

Please enter our order for a copy of the Specifications of Household Refrigerators.  
We have noticed various inquiries in your publication from refrigerator service organizations asking to be placed on your catalogue mailing list. Please advise us what this service consists of, or, if you wish, you can place our name on this list to receive various catalogues.

JULIAN L. BARTELSTONE.

Answer: Manufacturers and jobbers of parts and supplies have been asking us to provide some arrangement for mailing their catalogs and bulletins to service men, so early this year we worked out such a plan. However, due to the unprecedented activity of the industry this year, our staff and equipment have been loaded with work and it has been impossible for us to get the program going as we expected.

We have published a great many of the requests and we are informed that several of the manufacturers and jobbers have sent their catalogs direct.

Service men are invited to register their names and the original plan will be put into operation as soon as possible.

### Refrigeration Engineers

Mechanical Refrigerator Service Co.  
Refrigeration Engineers—Air Conditioning  
Service—Repairs—Installation  
1647 E. 32nd St.  
Brooklyn, N. Y.

Gentlemen:

I am a constant reader of your publication and find it very helpful in my line of business.

Please enter my name on your catalogue mailing list. EUGENE COSTA

### Commercial Dealer

Luttrell Fixture Co.  
Viking Refrigerators—Lipman Automatic  
Refrigeration  
Specializing in Refrigeration-Air-Conditioning-Complete Store Layouts  
29 E. Simmons St.  
Galesburg, Ill.

Aug. 21, 1936

Enclosed is our check for \$3.00 for which please send us your MASTER SERVICE MANUAL. Also please place us on your mailing list for catalogues.—E. F. Fredricks, Service Manager.

### Refrigerator Service

General Refrigerator & Radio Service  
440 Franklin St.  
Johnstown, Pa.

Enclosed you find \$5.25 for MASTER SERVICE MANUAL and the REFRIGERATION AND AIR CONDITIONING DIRECTORY.

The 25 cents is for Aug. 16, 1933,

issue ELECTRIC REFRIGERATION NEWS describing the servicing of Majestic Hermetic Seal Refrigerators.  
I wouldn't be without your splendid publication. Would you please enter my name on your catalog mailing list.  
JOSEPH G. DROLET

### Electrical Contractors

Micka Electric Co.  
Electrical Contractors and Dealers  
Stores in Hibbing, Chisholm and Virginia  
General Electric Appliances—Philco  
Radios—Maytag Washers  
Hibbing, Minn.  
Aug. 18, 1936

Gentlemen:

Please put us on your mailing list for catalogs. Thanking you in advance.  
G. R. SIMM

### Radio Shop

Modern Radio Shop  
Electrical Contractors  
Chester, N. J.  
Enclosed you will find twenty-five cents in stamps for which, please send us a copy of the July 29th, Air Conditioning Specifications Number of the ELECTRIC REFRIGERATION NEWS.  
Also have our name placed on your Catalogue Mailing List.  
JOHN E. JABLONSKI

### Servicing All Makes

W. W. Poindexter  
Service—All Makes Domestic and  
Commercial Electric Refrigerators,  
Carbonators, and Refrigerating Equipment  
Hilton Village, Pa.

Dear Sirs:

Please place my name on your mailing list for refrigeration catalogs. Thanking you in advance.  
W. W. POINDEXTER.

### Expert Repair Service

The Modern Home Appliances  
Electrical Refrigeration—Radios—Washing  
Machines—Vacuum Cleaners—Expert  
Refrigeration Repair Service  
21 School St., Webster, Mass.

Gentlemen:

We are a subscriber to the ELECTRIC REFRIGERATION NEWS and wish to be put on your catalog mailing list as per your announcement in a back issue.  
A. KRASNOFF,  
Refrigeration Service Mgr.

### Majestic Service

Ed. Stuerhoff  
Majestic Refrigerator Service Guaranteed  
Service on All Makes Hermetically Sealed  
Majestic Refrigerators a Specialty  
4131 N. E. 105th Ave.  
Portland, Ore.

Enclosed you will find check for \$3.25 for the 1936 edition of the MASTER SERVICE MANUAL and the August 16, 1933, copy of REFRIGERATION NEWS. Also I would appreciate very much to have my name put on the catalogue mailing list.  
ED. STUERHOFF

### Music Store

The Bruce Co., Inc.  
Musical Instruments  
Monroe Near Second  
Springfield, Ill.

Enclosed find our check for \$3.00 for which kindly forward us one of your MASTER SERVICE MANUALS.  
Please list my name on your mailing list.  
P. W. McVAY

Please find enclosed three dollars (\$3.00) for which please send me one copy of the MASTER SERVICE MANUAL.  
I would also like to be placed on your mailing list.—T. A. Milholland,  
117 So. Pine, Little Rock, Ark.

### Air Conditioning

Valley Refrigeration Supply Co.  
Shop and Engineering Service  
Cooling—Ventilating—Heating  
Air Conditioning  
525 Market St., Youngstown, Ohio  
Gentlemen:  
Please place us on your Catalog Mailing List.  
E. S. WRIGHT.

G. Henry See  
Refrigerator Service and Repairs  
533 Division St.  
Sault Ste. Marie, Mich.

I am enclosing a money order for five dollars (\$5.00) for a copy of the MASTER SERVICE MANUAL and a one-year subscription to the ELECTRIC REFRIGERATION NEWS beginning July 29. I would also appreciate being included on your catalog mailing list.

Will you please rush the SERVICE MANUAL.  
G. HENRY SEE.

### Shopping for Parts

I have been a Frigidaire service man for the past 12 years and have been a subscriber to your valued paper for a number of years.

Quite frequently I am called on to service other makes of refrigerators. This makes it necessary to shop around for parts. I would therefore like to be put on your catalog mailing list.—Alfred Haas, 30 W. Fifth St., Pottstown, Pa.

### R.A.C.I. Student

Enclosed find check for three dollars (\$3) for Refrigeration Engineers Manual.

Also please put my name on your catalog mailing list.

I am still studying from R.A.C.I. but expect to be finished in a month or so. I still have great praise for their course.

I must also praise you for the fine first hand articles about the Coolerator trial. It contained very valuable information for all—Richard J. Souden, 43 N. Diamond St., Shamokin, Pa.

Inclosed is \$5.00 for which kindly renew my subscription to the NEWS which expires 8-13-36. Also send me a copy of the MASTER SERVICE MANUAL.

Would you place my name on your catalog mailing list.—Walter J. Harris, 6875 N. Central St., Portland, Ore.

### Additional Requests for Manufacturer's Catalogs

Thomas F. Lovitt, 436 W. Jackson St., Union City, Tenn.

L. M. Dangremond, Sales Representative, 11136 S. Hoyne Ave., Chicago, Ill.

Johnston & Sell, 316 N. Main St., Mitchell, S. D.

Smith Dept. Food Store, D. L. Smith, P. O. Box 398, Leaksville, N. C.  
Humphreys Jewelry Store, H. E. Humphreys, Prop., Radios, Refrigerators, and Electrical Supplies, Grandfield, Okla.

Lorentz & Zimmerman, 433 Broadway, Peoria, Ill.

William C. Linz, 6445 Madison St., Brooklyn, N. Y.

J. Auer, Service Man, 75 Orange St., Buffalo, N. Y.

Lou Fellerman, 629 W. 170th St., New York, N. Y.

O. E. Huston, 2705 Bailey Rd., Cuyahoga Falls, Ohio.

—	Disconnect Switch	—	Drier	○	AC Motor
①	Thermostat (Self Contained)	—	Strainer	○	DC Motor
①	Thermostat (Remote Bulb)	—	High Side Float	—	One Line Complete } Fuse
—P	Pressurestat	—	Low Side Float	—	Cooling Tower
⊗	Hand Expansion Valve	—	Gage	—	Evaporative Condenser
⊗	Automatic Expansion Valve	—	Finned Type Cooling Unit Natural Convection	—	Solenoid Valve
⊗	Thermostatic Expansion Valve	—	Pipe Coil	—P	Pressurestat with High Pressure Cut-out.
—	Evaporator Side	—	Forced Convection Cooling Unit	—	Compressor
—	Evaporator Pressure Regulating Valve, Thermostatic Throttling Type.	—	Immersion Cooling Unit	—	Scale Trap.
—	Evaporator Pressure Regulating Valve, Snap-Action Valve	—	Ice Making Unit	—	Condensing Unit Water Cooled
Comp. Side	Compressor Suction Pressure Limiting Valve, Throttling Type.	—	Heat Interchanger	—	Thermal Bulb
—	Hand Shut Off Valve.	—	Condensing Unit Air Cool		

### STANDARD REFRIGERATION SYMBOLS

The Refrigeration Division of Nema, Refrigerating Machinery Association, and Air Conditioning Manufacturers' Association have approved Standard Refrigeration Symbols (shown above) and submitted them to association members as "recommended practice" in connection with blueprint and general drafting work. This list of Standard Refrigeration Symbols is not complete or final, but may be added to from time to time.



## Classified

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

### POSITIONS AVAILABLE

**SALESMAN** for refrigerating equipment. Manufacturer requires high-grade man within greater New York area. Must have adequate knowledge of industry in this territory, some technical training or experience, and good selling record. Interview will be arranged only if full details in first letter. All replies held strictly confidential. Box 849, Air Conditioning and Refrigeration News.

**WANTED:** 2 designers of commercial refrigeration machinery by large manufacturer. Those qualifying must be well experienced in general engineering and refrigeration. Box 850, Air Conditioning & Refrigeration News.

**EXCEPTIONAL OPPORTUNITY** as district sales representative with nationally known coil manufacturer. Consideration will be given men with experience in contacting jobbers and distributors of electric refrigeration. We have openings for several capable men who know the commercial business thoroughly. Must be able to sell, teach men how to sell, organize and manage territories and make them produce. Prefer men located in any of the following territories: New York, Pittsburgh, Miami. Compensation: salary, expenses and bonus. Full particulars regarding experiences and references must be given in first letter which will be held strictly confidential. Box 836, Air Conditioning and Refrigeration News.

### SALESMEN WANTED

**LONG ESTABLISHED** Manufacturer desires correspondence with refrigeration and air conditioning salesmen. Also Sales Engineers who have had requisite experience and are interested in joining a growing business organization having considerable experience. Box 852, Air Conditioning and Refrigeration News.

### DISTRIBUTORS WANTED

**MANUFACTURER** of long standing, producing Refrigeration Machines (Ammonia—Freon—Methyl Chloride) also Air Conditioning Units and other refrigerating equipment both large and small, has some very desirable territory open and desires application from parties having experience and ability to handle a territory. Box 851, Air Conditioning and Refrigeration News.

### POSITIONS WANTED

**REFRIGERATOR** Manufacturing executive or engineer available. Broad experience in domestic cabinets of all steel, one piece construction in Dulux or vitreous finish and compressors of hermetic or conventional type. Have background and experience to produce high-grade articles at competitive costs. Now employed by a manufacturer of high-grade refrigerator. Go anywhere. Box 847, Electric Refrigeration News.

**REFRIGERATION MAN.** A-1 trouble shooter on commercial and domestic. Can figure heat load; had experience as an instructor in refrigeration. Will locate anywhere. J. S. BARTINI, 1271 E. 8th St., Brooklyn, N. Y.

### FRANCHISE AVAILABLE

**FOR SALE—Refrigerator** business 19 miles from New York City. Commercial, 2 domestic lines, oil burners and radio. Reason for selling is ill health. Established 15 years. Box 848, Air Conditioning and Refrigeration News.

### EQUIPMENT FOR SALE

**RECONDITIONED** Refrigerators for sale. Kelvinators \$29.00, Frigidaires \$39.00, Copelands \$39.00, Crosleys \$59.00, General Electric \$69.00, Electrolux \$59.00. Also "AS IS" refrigerators from \$15.00 up. Refrigerators for restaurants, 8 to 18 foot, displayed at our showroom, 160 West 34th Street, New York City. PILGRIM REFRIGERATION CO., 43-47 39th Place, Long Island City, N. Y.

1-1 hp. Frigidaire Type C compressor less motor \$60.00. 2-V5 Frigidaire Porcelain interior \$35.00. 2 Frigidaire 96F coils \$25.00 each. F.O.B. Chicago, COMMODORE ELECTRIC CO., 521 N. Wells St.

### REPAIR SERVICE

**REFRIGERATION CONTROLS**, domestic types, repaired. 48 hours. Ranco pencil types \$1.75, all box types, \$2.00. Majestic \$2.50. UNITED GAUGE AND INSTRUMENT COMPANY, 436 West 57th Street, New York City.

**HALELECTRIC LABORATORY** is America's pioneer repair house for temperature and pressure controls. Our service, price and precision workmanship are unequalled. Ask your dealer about Warrenol for stuck-up jobs. Send us his name and we will send you a generous sample. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

**MAJESTIC & GENERAL ELECTRIC** units repaired. Our standard job on these units is \$20.00, giving you a six months' guarantee. We also have our \$30.00 deluxe job, giving you a two-year

written guarantee. Please advise which job you want when sending your units. PENO SERVICE COMPANY, Ft. Smith, Arkansas.

**SAVE MONEY** on electric motor repairs. We rebuild and rewind thousands of motors yearly for largest refrigeration firms in the East and can save you money on your motor problems. Write for our price schedule for rewinding or rebuilding motors for refrigeration, oil burners, washing machines, motor stokers, and air condition motors. Out of town motors are picked up and delivered by our motor transportation service. Write for our dealers' price list. P. J. QUINN'S SONS, INC., 166 Vernon Ave., Long Island City, N. Y.

**GENERAL ELECTRIC** and Majestic hermetically sealed units repaired and exchanged. Guaranteed work. Wholesale only. Give model when writing. All prices quoted f.o.b. Chicago. AMERICAN REFRIGERATING ENGINEERS, INC., 2257 Silverton Drive, Chicago, Illinois.

### PATENTS

**HAVE YOUR** patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue New York City.

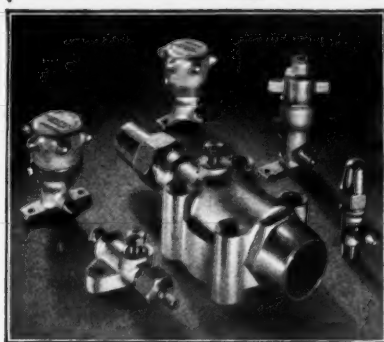
# PERFECTION

## REFRIGERATION PARTS

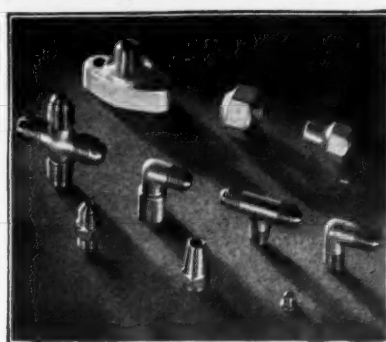
..A Complete Line Meeting Every Requirement..



COMPRESSOR PARTS



VALVES



FITTINGS

One of the outstanding features of the Perfection line is its completeness.

This popular line of quality products—all of which are certified to excel—includes VALVES, FITTINGS, TOOLS and COMPRESSOR PARTS. These compressor parts are not limited to a single make, but are available for Copeland, Frigidaire, Kelvinator, Servel, Universal, Zerozone and others.

The very fact that the Perfection set-up is so all-inclusive is a great help to jobbers and refrigeration engineers. Centralized buying and quick service on dependable products, such as Perfection, save time and money—and create customer satisfaction.

To insure getting these certified parts, look for the seal of Perfection. An authorized jobber near you displays this emblem. If you do not know his name, write us.

PERFECTION  
REFRIGERATION PARTS CO.  
HARVEY, ILLINOIS



him for that purpose. Such application shall state the name or names and address or addresses of the person, members of the firm or partnership or officers of the corporation for whom a license is sought and the address at or from which the holder of such license will carry on business. Application for license shall be accompanied by receipt signed by, and showing payment to, the City Treasurer of the sum of \$25 if for a Master Refrigerator Installer's License or of the sum of \$2.00 if for a Refrigerator Installer's License, which payment shall, if the license is issued, be applied on the fee chargeable for the first annual license. If such application be for a Refrigerator Installer's license it shall be accompanied by the applicant's certificate of competency. If satisfied that the applicant has complied with the requirements of this ordinance, the City Comptroller shall issue the license applied for for a period of one (1) year from the date of issue and may renew the same annually upon a like application and payment to the City Treasurer of the fee required as in the case of the original application.

The Examining Board may require the holder of any Refrigerator Installer's License to take a further examination at any time to test the qualifications of the holder thereof, or may suspend for incompetency any license for a definite period or revoke or cancel the same, after public hearing, based upon written charges prepared and served by the Board on the licensee, and any license may be suspended or revoked by the City Council as provided by Section 14 of the License Code (Ordinance No. 48022).

Section 8. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 313. Master Refrigerator Installer's Bond: No Master Refrigerator Installer's License shall be granted until the applicant therefor shall have furnished a good and sufficient bond in the penal sum of \$600, executed by the applicant for such license, as principal, and by a surety company authorized to do business as such in the State of Washington, as surety, approved as to sufficiency of surety by the Mayor and City Comptroller and as to form by the Corporate Counsel and conditioned:

(a) That the principal will abide by the terms of this ordinance and all ordinances relating to installing, altering, repairing or servicing mechanical refrigeration systems and devices;

(b) To save harmless and indemnify the City of Seattle from any and all loss, damages, actions and claims of any kind or character which may accrue to or be suffered by any person by reason of failure of the principal, his servants and agents, to abide by the terms of this ordinance and all ordinances relating to installing, altering, repairing or servicing mechanical refrigeration systems or devices;

(c) To save harmless and indemnify the City of Seattle and any and all persons for any and all loss or damage of any kind or character which may be suffered by them by reason of, or resulting from the failure or neglect of the principal, his servants and agents, to abide by the terms of this ordinance and all ordinances relating to installing, altering, repairing or servicing mechanical refrigeration systems or devices; Provided, that the liability of any surety

hereunder shall not extend to claims for labor or material incurred by any principal:

(d) That the obligations of said bond shall not be terminated before 60 days from the date of written notice by the surety thereon of such termination to the City Comptroller of the City of Seattle;

(e) The liability of the surety upon this bond shall be limited to the amount specified in the bond, and in case of recoveries had by two or more persons for the violation of conditions of said bond in excess of the amount of the bond, such recoveries shall be prorated and the total recovery as against the surety shall not exceed the amount of the bond;

In the event such bond or the coverage thereof be terminated or impaired by notice of termination, expiration, or the attaching of any liability thereon, or otherwise, any license granted under Section 1 hereof shall be suspended until such time as an additional bond, or bonds, be furnished and maintained in the full, unimpaired penal sum of \$600.

Section 9. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 314. License not required for period of 90 days: Any person installing, altering, repairing or servicing, or engaged in, conducting or carrying on, the business of installing, altering, repairing or servicing mechanical refrigerating systems or devices at the time this ordinance takes effect shall be allowed to continue so to do without a license for a period of 90 days after the effective date of this ordinance; Provided, that any such person shall within 60 days after the effective date himself make application to the City Comptroller for a license hereunder; and as to such applicants, the Examining Board shall, within 90 days after the effective date of this ordinance, conduct examinations and pass upon the qualifications and competency of such applicants and report the result of such examination and its recommendations as to those entitled to licenses to the City Comptroller, who shall issue the licenses to the applicants in accordance with the recommendations of the Examining Board.

Section 10. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 315. Penalty: Any person violating or failing to comply with any of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine in any sum not exceeding \$300, or by imprisonment in the City Jail for a period not exceeding 90 days, or by both such fine and imprisonment.

## Service Methods

### Defeated Seattle Ordinance Would Have Required Servicemen to Pass Examination

(Concluded from Page 1, Column 1)

dealer declared that definite labor costs would help the industry. At present, he said, much money is lost in unprofitable bidding, and through difficulty in determining labor costs, regardless of the hourly rate paid.

Despite their antipathy toward the proposed ordinance, most dealers admit some sort of regulation is needed. Several accidents which have occurred in the city during the past year have reflected on the refrigerator business as a whole. In one of these, a home was wrecked by an explosion, causing a loss of several thousand dollars; fortunately, the occupants were unharmed.

Some Seattle dealers feel that such accidents might be avoided by elimination of the irresponsible operator. In many cases, it is said, these dealers employ boys and untrained men, who know little about proper installation methods.

The complete text of the ordinance proposed by the Seattle dealers is as follows:

AN ORDINANCE regulating and licensing persons installing, altering, repairing, and servicing mechanical refrigerating systems and devices; defining offenses; prescribing penalties; and amending Ordinance No. 48022 (the license code) by adding thereto ten (10) new sections numbered 306 to 315, inclusive.

Be it ordained by the city of Seattle as follows:

Section 1. That the License Code (Ordinance No. 48022) be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 306. Master Refrigerator Installer's License required. . . Fee: It shall be unlawful for any person to engage in, conduct, or carry on, the business of installing, altering, repairing or servicing mechanical refrigerating systems or devices of Class A, B, C, D, or E types, as defined in the "American Standard Safety Code for Mechanical Refrigeration" approved by the American Standards Association, October, 1930, a copy of which is filed in the office of the City Comptroller and Ex-Officio City Clerk, bearing File No. 133,715, or to advertise or hold himself out as engaging in, or carrying on, such business without first having obtained and being the holder of a valid and subsisting license so to do, to be known as a "Master Refrigerator Installer's License," the fee for which is hereby fixed in the sum of \$25 per annum. Said license shall be posted and conspicuously displayed in the office or regular place of business of the holder thereof, or if no regular place of business be maintained, shall be carried on the person of the holder thereof (during business hours) or while business is being carried on and be displayed at the request of any interested person.

Section 2. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 307. Refrigerator Installer's license required. . . Fee: No person whether licensed as a Master Refrigerator Installer or not, shall, as an artisan, workman or employee, install, alter, repair or service any such mechanical refrigerating system or device or perform work thereon, without being the holder of a valid and subsisting license so to do to be known as a "Refrigerator Installer's License," the fee for which is hereby fixed in the sum of \$2.00 per annum.

Section 3. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 308. Certificates of Competency—Examinations Thereof: No Refrigerator Installer's License shall be issued until the applicant therefor shall have success-

fully passed an examination given and conducted by, and received a certificate of competency from, the Examining Board hereafter created. Such examination shall be of a character which will thoroughly test, and such certificate of competency shall certify, the applicant's ability, competency and qualifications to install, alter, repair, and service mechanical refrigeration systems or devices of Class A, B, C, D, and E types (1) which use high pressure refrigerants of 125 lbs. or above, or (2) which use low pressure refrigerants below 125 lbs., or the applicant's ability to install, alter, repair, and service each of such systems.

Section 4. That said License Code be, the same hereby is, amended by adding thereto a new section to read as follows: Section 309. Examining Board: There is hereby created an Examining Board to pass upon, and to issue certificates of competency of, the qualifications and competency of all applicants for Refrigerator Installer's Licenses required by this ordinance. Said Board shall consist of the Commissioner of Health, the Chief Plumbing Inspector, and the Chief Examiner of the Civil Service Commission, who shall act in such capacity ex-officio. The Chief Examiner of the Civil Service Commission shall act as Secretary of the Board but shall receive no compensation as such.

Said Board shall within 30 days after the effective date of this ordinance meet, organize and select a chairman and designate the time and place of the first examination of all pending applications for licenses. Further examinations shall be held from time to time as the Board shall determine but no applicant for a license shall be required to wait for an examination for more than 30 days after filing his application with the Examining Board. The Board shall keep and preserve a record of all persons examined by them and shall issue to those successfully passing such examination certificates of competency stating the qualifications and competency of the persons examined.

Section 5. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 310. Advisory Committee: The mayor shall within 30 days after the effective date of this ordinance and from time to time thereafter as may be necessary, designate an Advisory Committee to the Examining Board to consist of one person who is either a manufacturer of mechanical refrigerating systems or devices or an agent or employee of such manufacturer, and one person who for not less than five years immediately preceding the date of his appointment has been engaged in the actual work of installing, repairing, altering and servicing mechanical refrigerating systems. The Advisory Committee shall upon request of the Examining Board consult with such Board and assist in the examination and rating of applicants for the license required by Section 308 of this ordinance but shall receive no compensation for their services while acting in such capacity.

Section 6. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 311. Application for Examination and Certificate of Competency: Any person desiring an examination for a certificate of Competency shall make written application therefor to the Examining Board upon a form to be furnished by said Board for that purpose. Such application shall state the name, age, address, and pertinent experience of the applicant and such other information as the Board may require.

Section 7. That said License Code be, and the same hereby is, amended by adding thereto a new section to read as follows:

Section 312. Application for License: Any person desiring any license required by this ordinance shall make written application therefor to the City Comptroller upon a form to be furnished by